

**HELIOS FM 350 W
HELIOS FM 750 W
HELIOS FM 1000 W
HELIOS FM 1500 W
HELIOS FM 2000 W
USER MANUAL**



87.5 – 108 MHz

STEREO AND MULTIPLEX COMPACT FM DIGITAL TRANSMITTER
WITH TCP/IP MONITORING*

**depending on options*

Date: 2013/10/10

ecreso WorldCast Systems Group

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This device meets the requirements of the applicable European Community Directives.



This device complies with FCC standards.



This device meets the specification requirements for IC certification.

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1. INTRODUCTION

1.1. About Ecreso

Founded in 1956 near Bordeaux, ECRESO was created by radio broadcasting enthusiasts and counts today as one of the most important players on the international broadcasting stage.

ECRESO offers analog and digital radio as well as digital TV transmitters (FM, DAB, DAB+, T-DMB, DVB-T/H), low power transmitters, which are air-cooled, as well as high power devices either air or water-cooled.

ECRESO is part of the WorldCast Systems group of companies which combines the collective expertise & extensive product portfolio of several major broadcast brands to offer turnkey systems in all major analog and digital technologies. Other brands within the group include:

- Audemat who designs monitoring equipment for analog and digital radio and TV as well as an extensive range of facility remote control solutions.
- APT Codecs who offer reliable and cost effective broadcast codec platforms delivering high quality content over IP, T1, E1, ISDN & Leased Lines.

As such, WorldCast Systems can offer complete broadcast solutions for the delivery, transmission and monitoring of broadcast content throughout the broadcast chain.

The group is founded on three core values:

1) **Product innovation:**

Audemat places a key emphasis on Research & Development and its innovative approach has been repeatedly recognized by the industry. WorldCast Systems has won awards for innovation at consecutive NAB Shows for over 10 years.

2) **Customer satisfaction:**

Audemat is dedicated to ensuring the best quality, value and service for its customers and has achieved ISO 9001 certification.

3) **Sustainable Development:**

Audemat is committed to sustainable development and demonstrates this commitment in several ways: it adheres to the UN Global Compact project and all new products are developed in keeping with an eco-design philosophy and built within Audemat's low energy consumption factory.

Audemat employs around 80 employees at headquarters in Bordeaux-Merignac, France. Audemat also has a subsidiary in Miami, USA that manages the North & South American markets as well as sales offices in the UK and India. An extensive network of international dealers and distributors means that the company is represented in over 45 countries throughout Europe, Middle East, Africa and Asia.

1.2. Warranty

Ecreso offers a standard three-year warranty on parts and workmanship from the date the transmitter is received; this warranty can be extended to five years.

Today, Ecreso also offers on some of the new range transmitters of the range a ten-year warranty associated with the acquisition of the EMR service (Expert Maintenance Reporting). Please contact Ecreso for more information about EMR and the ten-year warranty.

1.3. Before you start

This equipment complies with international mechanical and electrical standards. To maintain this compliance, as well as to ensure proper and safe working conditions and avoid electrical shocks and fire hazards, you must comply with the following recommendations:

- The device should only be utilized in the conditions described in the user manual.
- The device is designed for industrial usage and must only be operated by qualified personnel.
- The device may be heavy; it must be lifted and handled with care, specifically during unpacking and set up.



Electrical precautions

- Unplug from mains outlet before any intervention.
- Any maintenance, adjustment or repair must be carried out by personnel specifically trained by WorldCast Systems.
- Before switching on the device, make sure the nominal voltage specified on the device matches the mains nominal voltage.
- The device should only be operated on a stable electrical network. If the electrical network is not stable, a power conditioner, such as a UPS, must be used
- The device must only be used with a plug that incorporates a protective ground contact.
- To avoid any risk of electrocution, the protection conductor must not be cut, intentionally or accidentally, either on the device or on the power cord.
- High quality shielded cables are mandatory.



Environmental precautions

- It is necessary to verify that environmental conditions comply with those recommended in the manual.
- Nothing must obstruct the ventilation.
- To avoid any electromagnetic interference, the device must only be used when it is closed, installed in a cabinet and connected to the earth as per the instructions.
- The device should not be exposed to dripping or splashing and no objects filled with liquids, such as coffee cups, should be placed on the equipment.
- Connectors may be hot on high power units.



Precautions regarding the lithium battery

This device includes a lithium battery.

If the battery is not correctly replaced, there is a risk of explosion.

Only replace it with a battery of the same type. Contact us before attempting to use another type

- Do not puncture the battery
- Do not throw the battery in fire
- Do not immerse the battery in water
- Do not throw away the used battery, recycle it instead. You may send it back to us if needed.

If these precautions are not followed, the guarantee will be void.

2. DESCRIPTION

2.1. General description

Combining the very latest technologies with our proven RF experience, our 350 W, 750 W, 1000 W, 1500 W and 2000 W transmitters have been designed to offer an innovative and highly reliable solution.

Among the first FM transmitters based on 6th Generation MOSFET, these transmitters are not only more robust, they also deliver efficiency of up to 74%. Top signal quality and performance are achieved thanks to the “FM Band Direct to Frequency” digital modulator which is at the heart of this range.

The manufacturing quality and the simplicity of use make these truly powerful transmitters to broadcast analog FM programs.

The Helios FM 350 W, the Helios FM 750 W, the Helios FM 1000 W, the Helios FM 1500 W and the Helios FM 2000 W are fully protected against overheating, VSWR and lightning.

They also offers a number of built in functions that can eliminate the additional cost and space requirements of external equipment.

Fully featured for local maintenance and configuration, they also allow full remote control by Web server, SNMP, RS232 or GPIOs*.

* Options available with the current version are:

- Basic RDS: the internal RDS encoder makes it possible to manage basic RDS parameters (PI, PS, TP, TA, PTY, MS, DI, radiotext, PTYN, group sequence, AF, 1 PSN, 2 DSN, dynamic scrolling PS)
- Audio backup: an audio file stored on a µSD card can be played in case of loss of audio.
- GPIO: this additional board allows remote control and management of your transmitter.
- TCP/IP: this additional board allows remote configuration via a web site and SNMP management

Please refer to Appendix A for more information on option management.

Project co-financed by the European Union, involved in the Aquitaine Area, through the European Funds for local development.



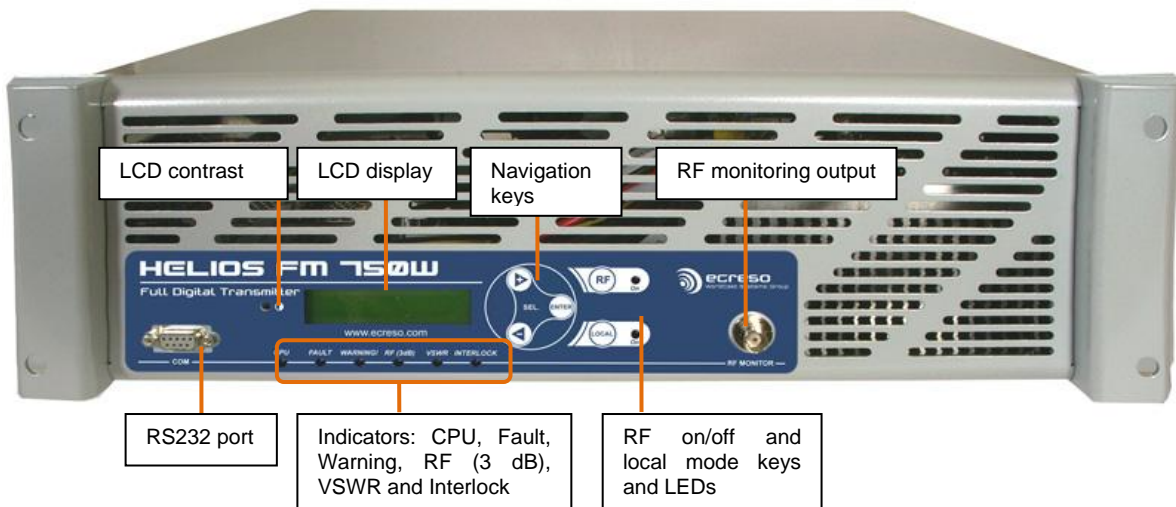
2.2. Accessories

The Helios FM is supplied with:

- 1 power cable
- 1 serial cable
- 1 USB cable
- 4 10 A fuses (for Helios FM 350 W, 750 W and 1000 W only)
- 1 interlock plug + locks
- 1 box including 1 CD (documentation + PC application) and 1 quick start notice.

2.3. Helios FM 350 W / 750 W / 1000 W / 1500 W / 2000 W Description

2.3.1. Front panel



Description of indicator LEDs:

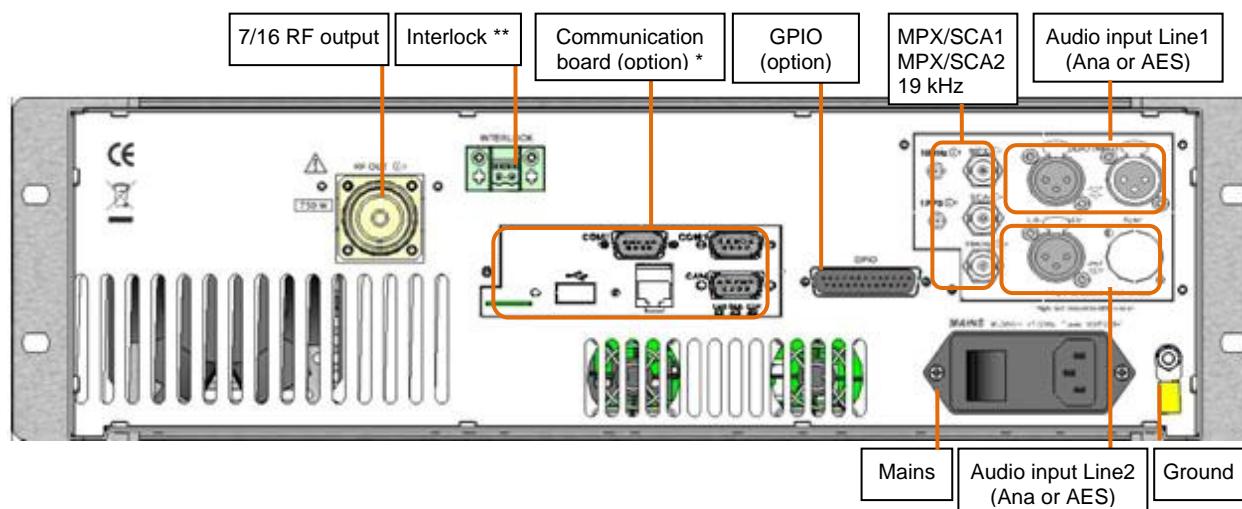


- CPU: blinks to indicate CPU activity
- FAULT: major fault of the unit (3 dB or VSWR)
- WARNING: minor fault of the unit (ambient temperature, radiator temperature, psu temperature, fan, current, voltage, 1 dB, loss of signal, battery low on startup).
- VSWR: VSWR of the unit
- RF (3dB) : 3 dB of the unit
- INTERLOCK: indicates that internal or external safety links are not activated
- RF: indicates that the unit is on RF=ON. Associated to the RF button
- LOCAL: indicates that the unit is in local mode. Associated to the Local button

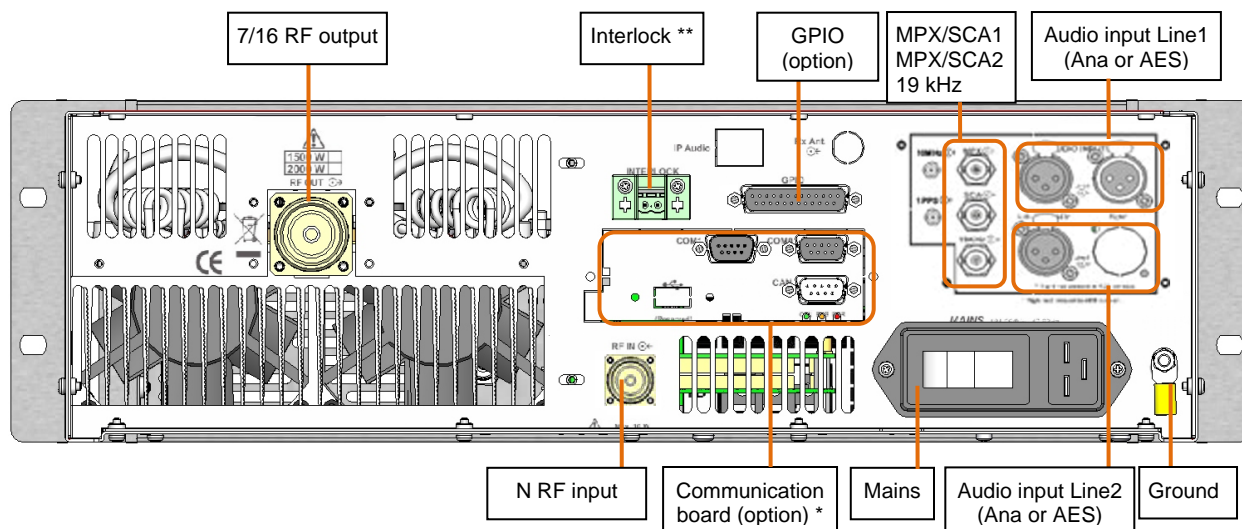


2.3.2. Rear panel

Helios FM 350 W / 750 W / 1000 W



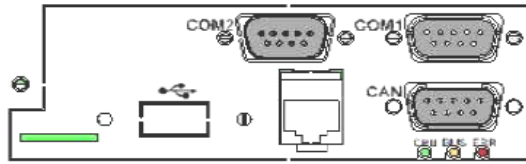
Helios FM 1500 W / 2000 W



* Two optional communication boards are available:

TCP/IP board

- 2 RS232 ports (COM1 and COM2)
- 1 μ SD card
- 1 USB port
- 1 Ethernet port
- 1 CAN port

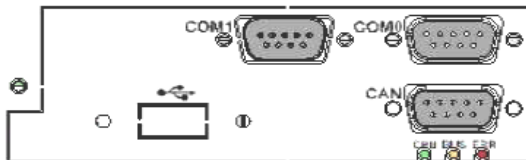


On the TCP/IP board, the COM1 port is used to send serial commands, the COM2 port is used for dynamic PS tags.

i The μ SD card is an external storing device meant to mostly stay in place. Removing and setting it back triggers error messages visible on the embedded web site; it should therefore only be done during maintenance operation procedures.

CAN board

- 2 RS232 ports (COM0 and COM1)
- 1 slave USB port
- 1 CAN port

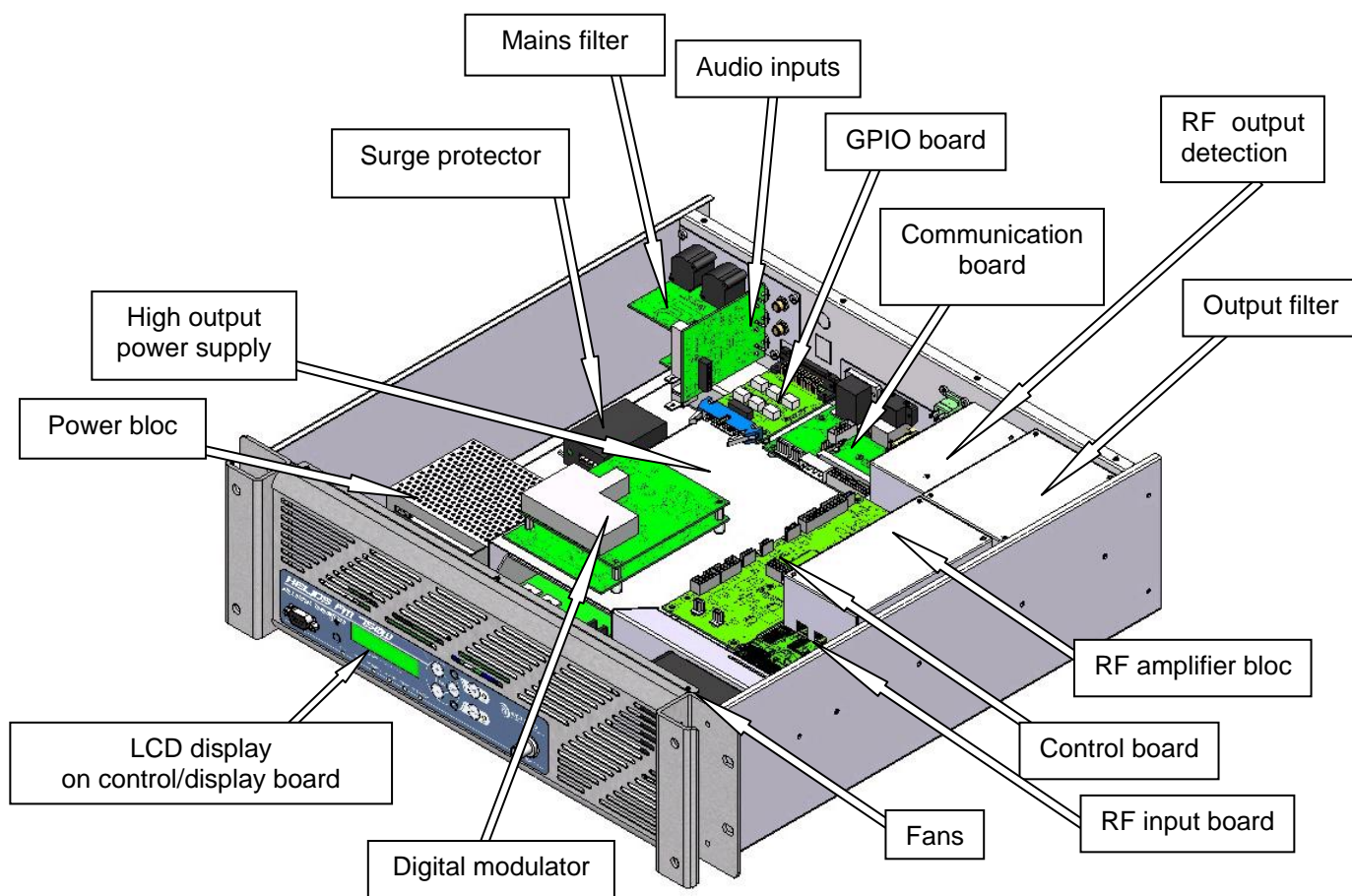


On the CAN board, the COM0 port is reserved for the unit's upgrade, the COM1 port is used to send serial commands.

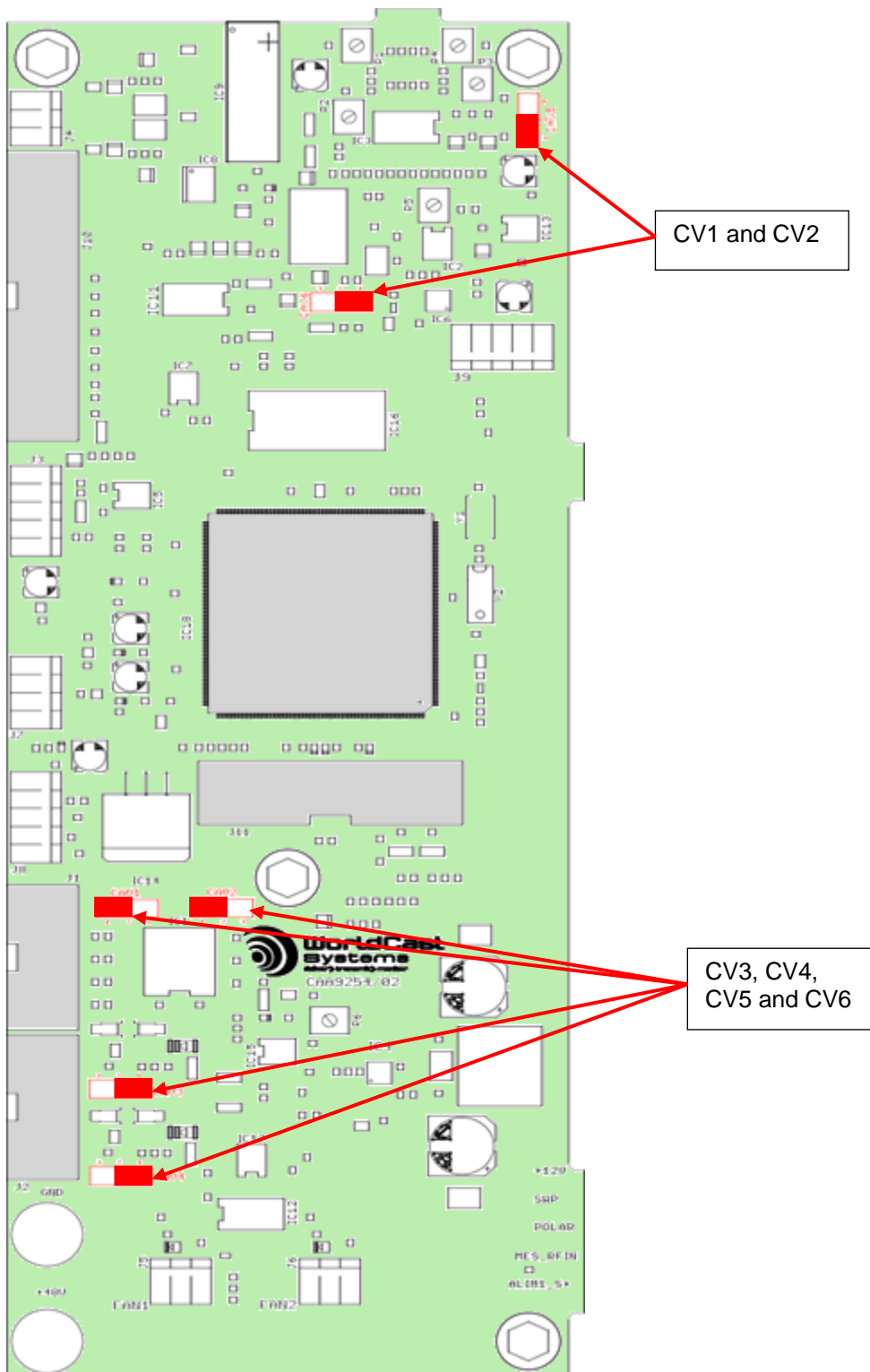
** The safety loops must be closed to ensure the transmitter will work. If nothing is connected to these connectors, interlock plugs must be present to close the loop.

2.3.3. Opened cover

Helios FM 350 W / 750 W / 1000 W



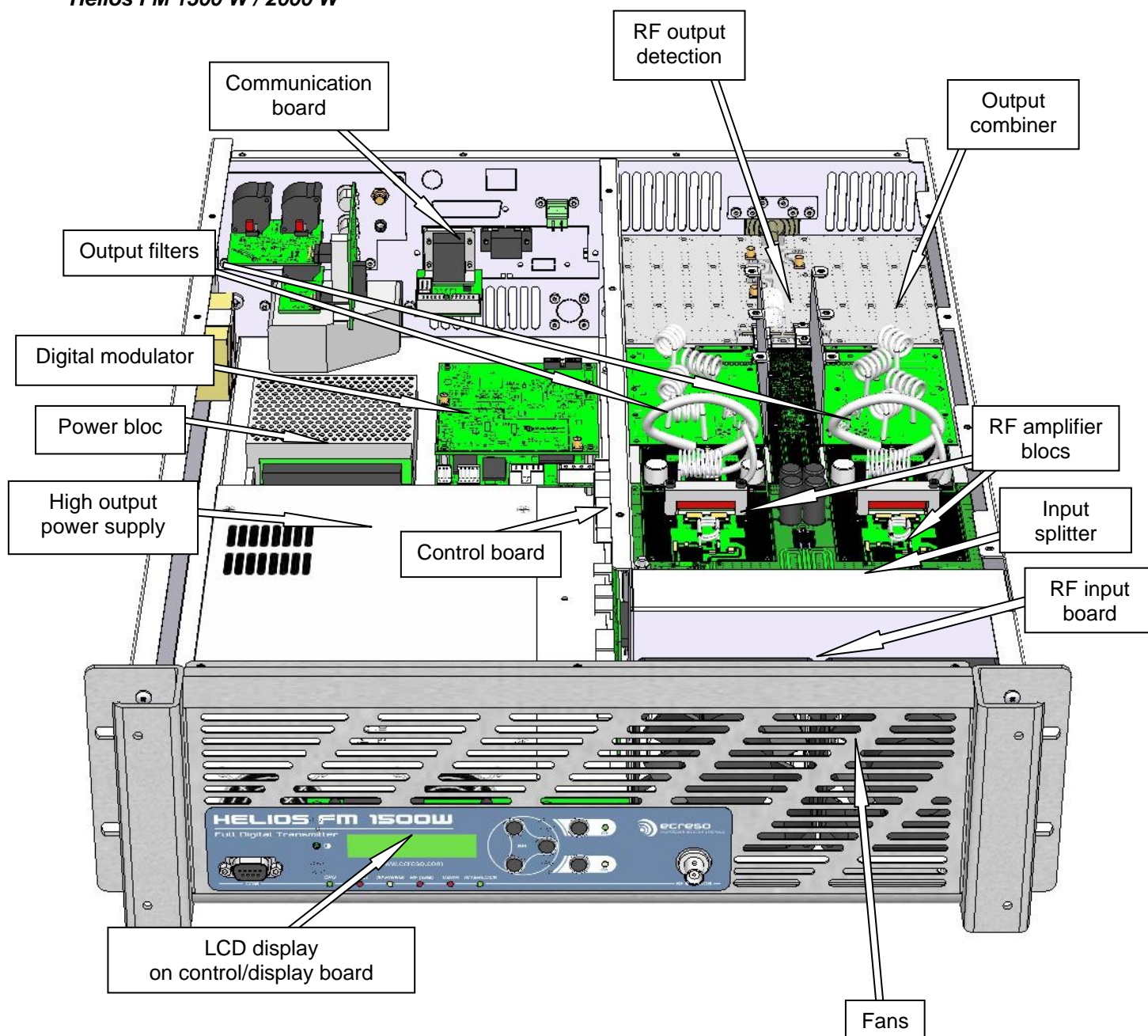
Control board Helios FM 350 W / 750 W / 1000 W



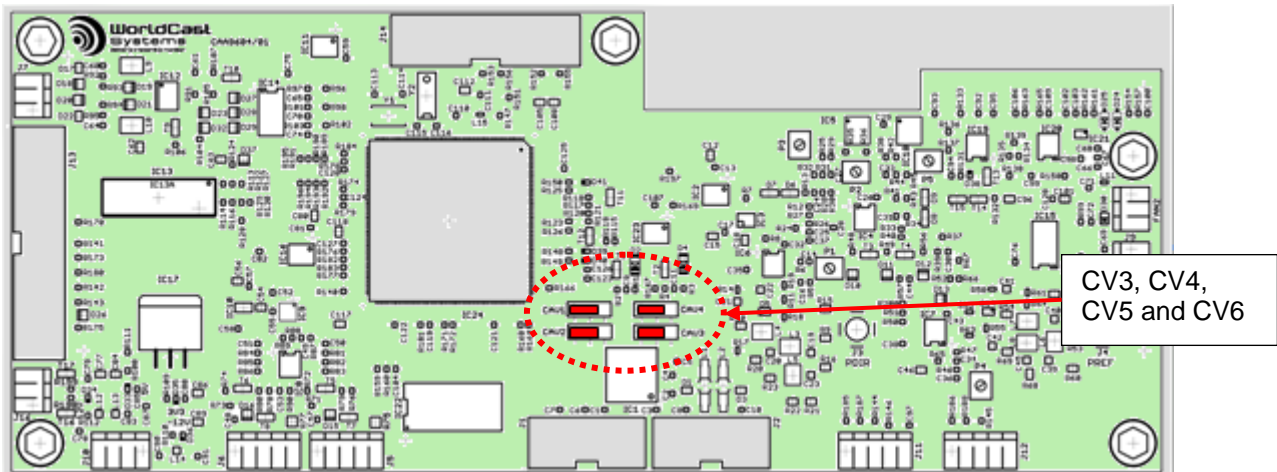
CV1 – CV2: jumpers in position 1-2; this configuration is used in factory for setting the RF. **Factory settings – do not modify.**

CV3 – CV4 – CV5 – CV6: jumpers in position 1-2; this configuration makes it possible to use the front panel serial port. **Factory settings – do not modify.**

Helios FM 1500 W / 2000 W

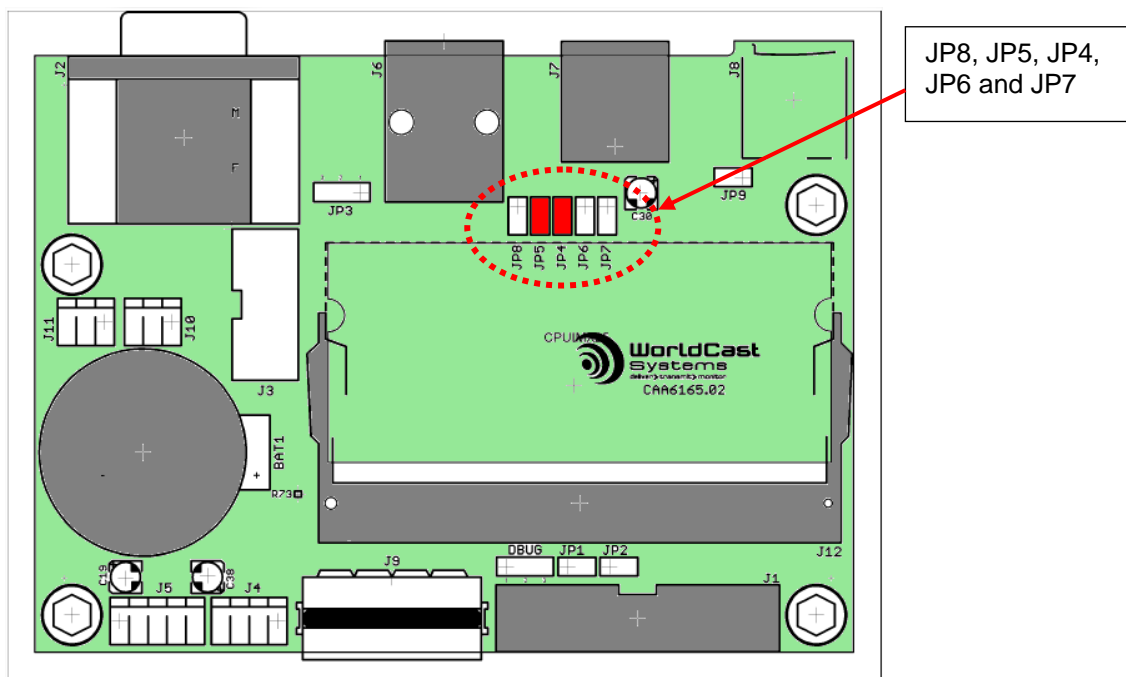


Control board Helios FM 1500 W / 2000 W



CV3 – CV4 – CV5 – CV6: jumpers in position 1-2; this configuration makes it possible to use the front panel serial port. **Factory settings – do not modify.**

IP board (option) – all powers



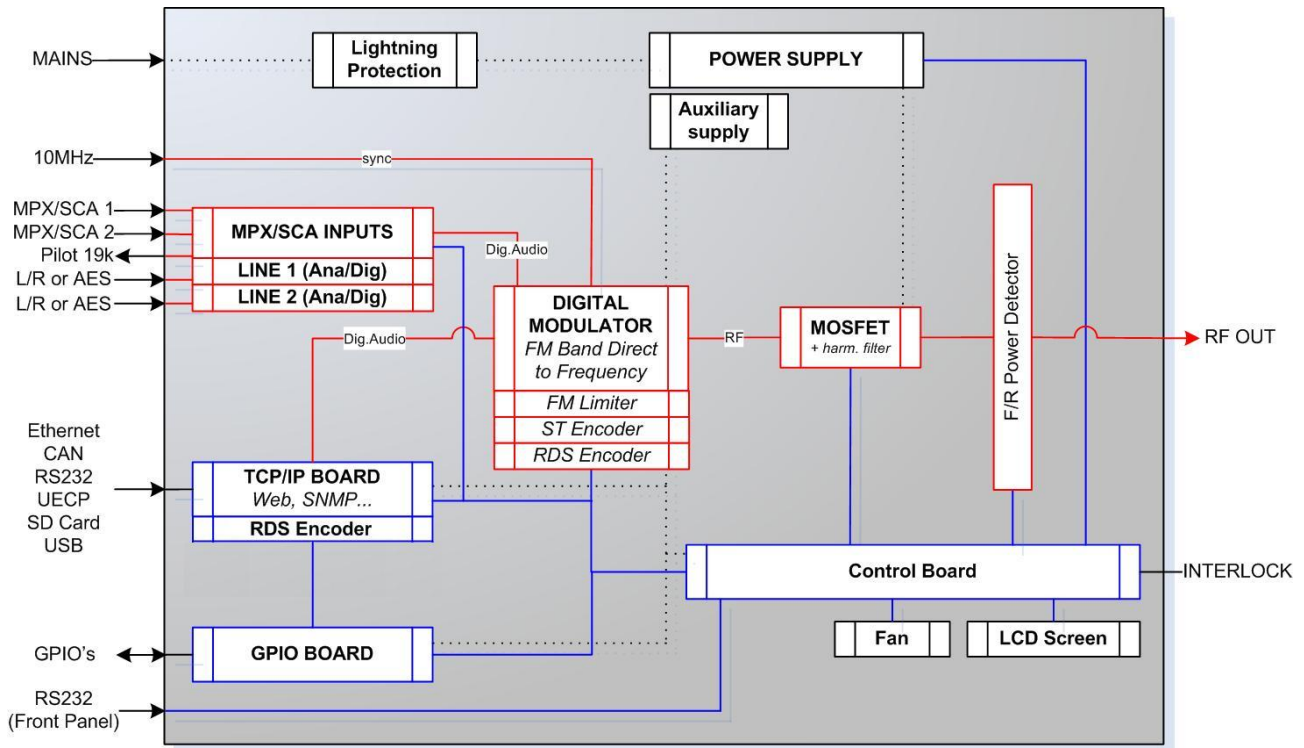
JP4 – JP5: jumpers are present.

JP6 – JP7 – JP8: no jumpers.

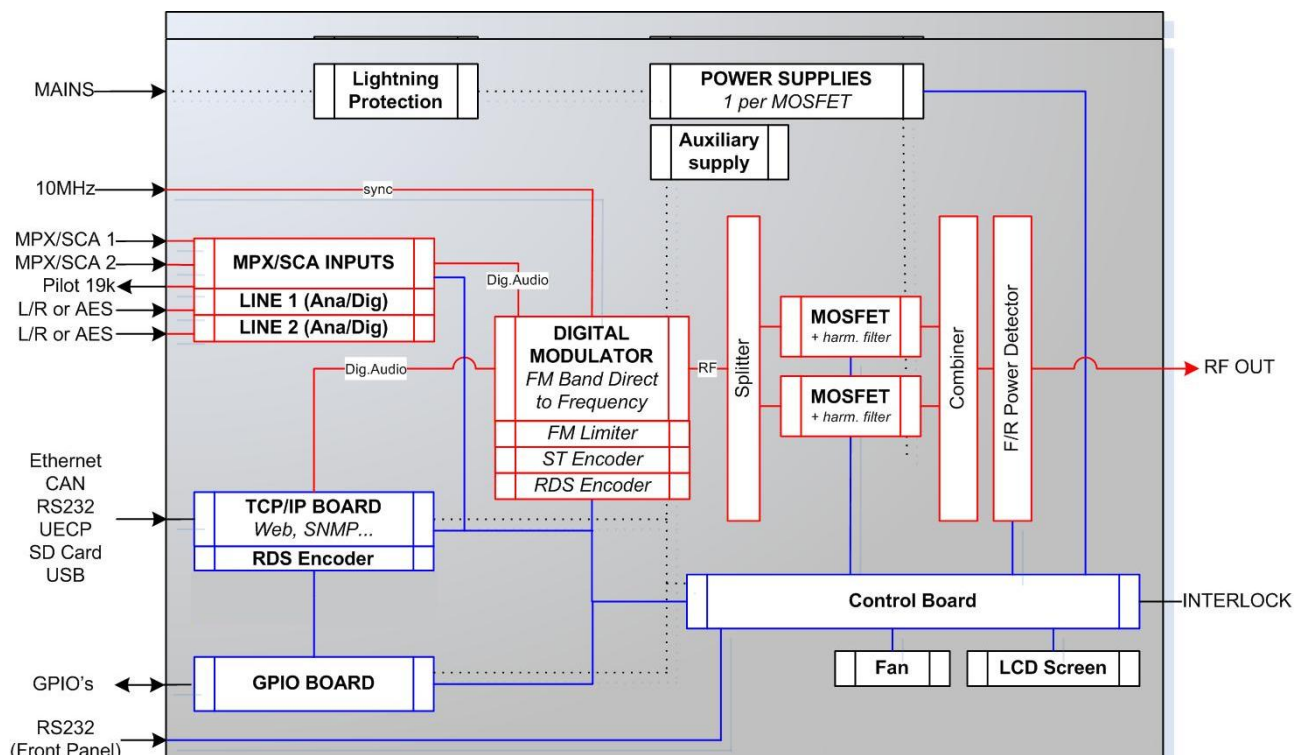
These jumpers make it possible to set the starting mode. **Factory settings – do not modify.**

2.3.4. Synoptic diagram

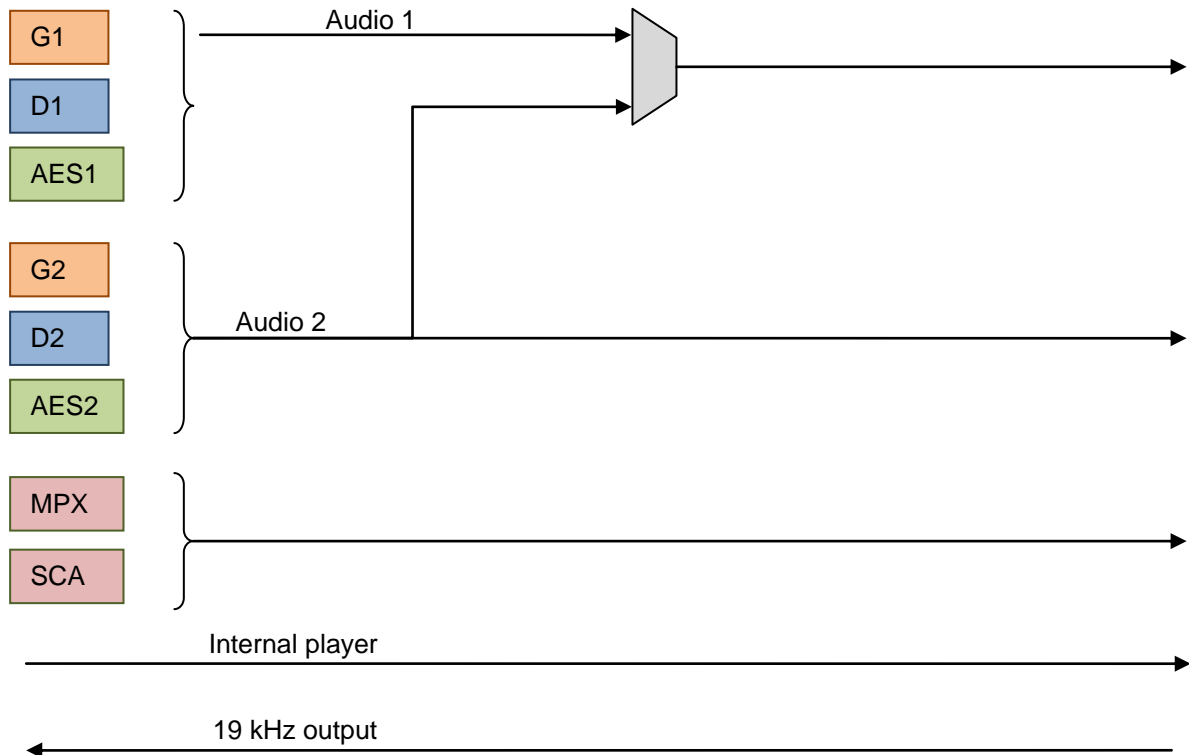
Helios FM 350 W / 750 W / 1000 W



Helios FM 1500 W / 2000 W



Audio



2.3.5. 3U Rack

The choice of stainless steel as material guarantees against corrosion. The rack structure and the structure of the monoblock front panel reinforce the device. The rectangular outline of the front panel has an LCD display. The transport handles are mechanically interchangeable and can be removed. The cover is fixed by a set of M3 POZIDRIV screws and can be easily removed. The user has access to every module to set the parameters of the device.

2.4. Protecting the transmitter

To ensure the transmitter will work with no risk of damage, a series of protections has been set.

2.4.1. Surge Protector

An optional surge protector module can be added to the chassis. The goal of this module is to limit the surge caused by lightning. It works after the main protector usually located in the electrical board and before the power supply protector, thus offering an optimal level of protection. The protector principle is to capture the surge and divert it to the ground so as to protect the transmitter and its power supplies.

The surge protector used by Ecreso includes multi-MOV technology and a gas discharge tube (GDT) giving a very high protection and very low parasitic capacitance and leakage currents.

Please refer to Appendix B 'Maintenance' for the procedure to replace the surge protection module.

2.4.2. Protection against VSWR

Several systems coexist to offer the optimal protection against VSWR:

- **Hardware protection:**
In case of open circuit or short-circuit, the RF is cut. When the situation returns to normal, it is automatically reset. The protection is triggered in case of an overshoot of the reflected power over:

Transmitter power	20 W	100 W	350 W	750 W	1000 W	1500 W	2000 W
Threshold	3 W	10 W	35 W	45 W	52 W	90 W	90 W

- **Software protection:**
The software protection prevents the transmitter to reach a given reflected power value by blocking the control or lowering the power.

Transmitter power	20 W	100 W	350 W	750 W	1000 W	1500 W	2000 W
Threshold	2 W	8 W	30 W	40 W	45 W	80 W	80 W

- Software settings for the reflected power security management (see VSWR Trip, section 5.2).

2.4.3. Protection against high temperature

The Power Supply module includes its own protector against high temperature: the protector cuts off the power supply output voltage if the temperature is abnormally high. When the situation returns to normal, it is automatically reset. The temperature threshold value varies depending on the PSU.

The ambient temperature and the radiator temperature are monitored.

- The max ambient temperature is set by software (see menu Temp/Fan, section 6.3.18 or serial command CONF.AMB.MAX, section 7.2.4), default value is 50°C. In case of overshoot, a Warning alarm is triggered (Alarm Amb).
- The max radiator temperature is set by serial command (see serial command CONF.HEAT.MAX, section 7.2.4), default value is 65°C for transmitters from 350 to 1000 W, 70°C for 1500 W transmitters and 80°C for 2000 W transmitters. In case of overshoot, a Warning alarm is triggered (Alarm Heat). This value cannot be set for Helios FM 20/100 W.
- The max internal temperature is set at 70°C for transmitters from 20 to 1000 W, 70°C for 1500 W transmitters and 80°C for 2000 W transmitters. If the temperature exceeds 70°C, the RF is cut off and a fault alarm is triggered (Alarm Temp).

2.4.4. Protections incorporated into the PSU


All Helios FM and Goliath FM module from 350 to 2000 W have an auxiliary power block and a power block, each having its own protections:

- Against overloads: protects by limiting the current. For auxiliary power supplies, it is a protection against shorts circuits.
- Against overvoltage.
- Against high temperatures (see previous section).

The main power supply voltage and the auxiliary power supply voltage are monitored as follows:

- **Main power supply:**
if the difference between the measured voltage and the expected voltage is greater than 10%, a Warning alarm is triggered (Alarm Volt1). Expected voltage is automatically computed.

- Auxiliary power supply:
Voltage should be either 5, 12 or -12 V. if the difference between the measured voltage and the nominal voltage is greater than 10%, a Warning alarm is triggered (Alarm Volt Aux).

 *For both power supplies, we are monitoring the output voltage (DC); the input is not monitored.*

The current is also measured and monitored. The threshold varies depending of the power of the Helios FM: 2 A for the Helios FM 20 W, 8.5 A for the Helios FM 100 W, 20 A for the Helios FM 350 W, 23 A for the Helios FM 750 W, 29 A for the Helios FM 1000 W, 26 A per amplifier pallet for the Helios FM 1500 W, 31 A per amplifier pallet for the Helios FM 2000 W. In case of overshoot, a Warning alarm is triggered (Alarm Cur) and the nominal power is reduced.

3. TECHNICAL SPECIFICATIONS

3.1. RF section

Frequency range	87.5 to 108 MHz
Summary of different steps	10 kHz
Frequency stability	$< 10^{-6}$ per year
Power range	50-350 W, 50-750 W, 50-1000 W, 150-1500 W or 200-2000 W
Power output	continuously 0-350 W, 0-750 W, 0-1050 W, 0-1550 W or 0-2050 W
VSWR	< 1.35 Optimal performance: < 1.1
Spurious and harmonic suppression	> 75 dBc
10 MHz input recommended range	-10 dBm to +10 dBm

3.2. Composite operation

Bandwidth	> 40 Hz to 53 kHz @ 0.1 dB > 20 Hz to 60 kHz @ 0.2 dB > 60 kHz to 80 kHz @ 0.4 dB
Intermodulation distortion	$< 0.05\%$
FM S/N ratio	> 80 dB RMS @ 75 kHz deviation
AM noise	$< 0.1\%$ (50 dB) RMS (20-20 000 Hz)

3.3. Stereo operation

Bandwidth	> 20 Hz to 15 kHz @ 0.1 dB
38 kHz discontinuance	> 50 dB
Stereophonic crosstalk	> 50 dB
Preemphasis	0 μ s, 50 μ s or 75 μ s

3.4. Mono operation

Bandwidth	> 40 Hz to 15 kHz @ 0.1 dB
Out of band rejection	> 40 dB @ 19 kHz
Preemphasis	0 μ s, 50 μ s or 75 μ s

3.5. AF inputs

Analog (LINE1)

Connector	"XLR" type
Impedance	> 10 k Ω by default, adjustable to 600 Ω by jumpers, balanced
Bandwidth	Software adjustable
Level	Software adjustable (-18/+18 dBu range)

AES (LINE2)

Connector	"XLR" type
Impedance	> 110 Ω balanced
Bandwidth	Software adjustable
Level	Software adjustable (-20 to 0 dBFS range)
Sampling rate	Auto adjusted up to 192 kHz
Bit	16, 24, 32

Multiplex (MPX/SCA)

Connector	"BNC" type
Impedance	> 5 k Ω unbalanced
Level	Software adjustable (-18/+18 dBu range)

3.6. HF output

Connector	7/16 type
Impedance	50 Ω

Monitoring (RF Monitor)

Level	
Helios FM 350 W / 750 W / 1000 W	10 dBm \pm 3 dB @ 750 W at main output
Helios FM 1500 W / 2000 W	10 dBm \pm 3 dB @ 1500 W at main output
Slope	20 x Log (F/98)
Directivity	>20 dB in the band

3.7. Power supply

Voltage	184 VAC to 264 VAC
Frequency	47 Hz - 63 Hz
Max consumption	550 W (350 W version) 1150 W (750 W version) 1550 W (1000 W version) 2300 W (1500 W version) 3050 W (2000 W version)
Power factor	> 0.9
Fuses (for Helios FM 350 W / 750W / 1000 W)	10 AT

3.1. Interface panel

Indicators	Green CPU LED: CPU activity Red FAULT LED: major fault Yellow WARNING LED: minor fault Red RF (3 dB) LED: RF fault (3 dB) Red VSWR LED: VSWR fault Green INTERLOCK LED: safety interlock Green RF LED: RF on Yellow LOCAL LED: local mode
Screens	Back lighted LCD: displays operating parameters and menus.
Buttons	RF, local, +, -- and OK

3.2. Environmental

Nominal operating temperature	5°C to 45°C
Maximum operating temperature	0°C to 50°C
Warehousing temperature	-20°C to +70°C
Humidité	5 - 95 % humidité relative non-condensée
Warehousing time	< 10 years
Cooling	Internal ventilation Helios FM 350 W: ~20 l/s Helios FM 750 W: ~20 l/s Helios FM 1000 W: ~20 l/s Helios FM 1500 W: ~55 l/s Helios FM 2000 W: ~55 l/s

3.3. Physical

Helios FM 350 W / 750 W / 1000 W

Overall dimension	19" (482.6 mm) X 3U (133.5 mm) X 470 mm
Rack size without front panel	440.4 X 126.2 X 432 mm (WxHxD)
Enclosure depth required	600 mm
Mounting	19"enclosure, with 4 M6X12 screws
Weight	around 13 kg

Helios FM 1500 W / 2000 W

Overall dimension	19" (482.6 mm) X 3U (133.5 mm) X 690 mm
Rack size without front panel	440.4 X 126.2 X 620 mm (WxHxD)
Enclosure depth required	700 mm
Mounting	19"enclosure, with 4 M6X12 screws
Weight	around 18 kg

3.4. Miscellaneous

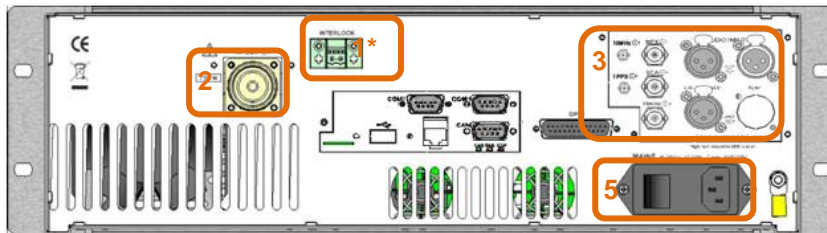
Marking	CE
Standards	1999/5/CE (R&TTE) ETS 302 018 (EMC) ETS 300 384 (Radio) NF EN 60215 (Safety)
Lithium battery	1 on the control board + 1 on the TCP/IP board (option)

Typical performances unless otherwise noted

4. STARTING UP YOUR TRANSMITTER

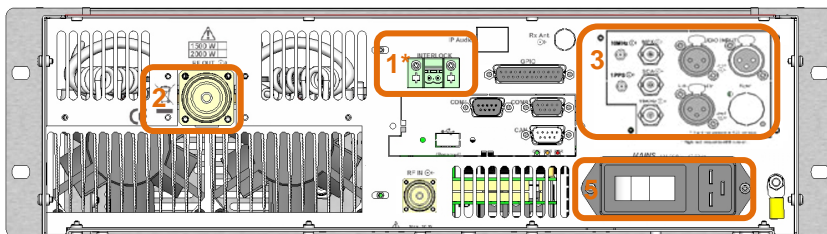
! *The transmitter should never be operated without a suitable antenna or test dummy load. Failure to observe this requirement may result in damage to the transmitter that is not covered by the warranty.*

4.1. Connecting the transmitter



Rear panel

Helios FM 350 W / 750 W / 1000 W

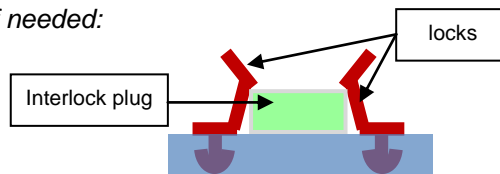


Rear panel Helios FM 1500 W / 2000 W



Front panel all versions

* Secure the interlock plug if needed:



1. Make sure the interlock plug is present on the rear panel; secure it using the provided locks if needed.
2. Connect the transmitter RF output to a 50 Ω load with a wattmeter.
3. The 50 Ω charge power must be greater than 500 W for a 350 W transmitter, greater than 1000 W for a 750 W transmitter, greater than 1250 for a 1000 W transmitter, greater than 1875 W for a 1500 W transmitter and greater than 2500 W for a 2000 W transmitter.

When you acquired your transmitter, the RF amplifier is deactivated and power is set to 0 W. These settings can be adjusted using the PC application, the front panel application or serial commands.

4. Connect the audio or MPX inputs.
5. To use the PC application or the serial commands, connect a PC to the serial port on the front panel of the Helios FM.
If your PC does not have a RS-232 port, use a USB/RS-232 cable.

6. Connect to power using the provided cable; you may unscrew the cable loop and pass the power cable through it to secure it.
7. Press the Local button on the front panel, then the RF button.

To configure the transmitter using the front panel: see section 4.2.

To configure the transmitter using the PC application: see section 4.3.

To configure the transmitter using the embedded web site (TCP/IO option only): see section 4.4.

To use serial commands, see chapter 7.

4.2. Using the front panel

Please refer to section 6.2 for front panel working principle.

4.2.1. Setting the transmitter

Set the power (in W), the frequency (in MHz) and enable the RF:

```

  9 8 . 0 0 M H z      0 W

```

From the main screen, press the "Enter" key to display menus then the "+" key until you see the TX Parameters menu.

```

  9 8 . 0 0 M H z      0 W
-> T X   P A R A M E T E R S >

```

Once you see this screen, press "Enter"

```

1  F R E Q      P F W D
-> 9 8 . 0 0      0

```

You may now set the frequency and the power. The arrow preceding the frequency indicates that this parameter is selected: press "Enter" to switch to edit mode.

```

1  F R E Q      P F W D
-> 9 8 . 0 0      0

```

Using the "+" and "-" keys, adjust the frequency starting with the last digit. Once you've reached the desired value, press "Enter" to go to the next digit. Follow the same procedure for all digits and confirm with the "Enter" key. Use the "+" to go the next parameter.

```

1  F R E Q      P F W D
  1 0 4 . 0 5  ->    0

```

The arrow now appears before the power: set the power in the same way you set the frequency.

After confirming the power value with the "Enter" key, enable the RF using the front panel button.

```

1  G O T O
  M A I N  -> R F

```

Press the "+" key until you see this screen. When the RF menu is selected, press "Enter" to return to the list of menus.

4.2.2. Input selection

```

      G O T O
-> I N P U T   S W I T C H >
  
```

Press the “+” key until you see the Input Select menu. Then press the “Enter” key.

```

1  I N P U T   S E L E C T
   -> M O D E : M A N U
  
```

Browse through the Input Select menu using the “+” and “–” keys to switch to manual mode.

```

1  I N P U T   S E L E C T
   -> M A I N : L I N E 1
  
```

Select the current input:

- "LINE1" for analog (see sections 4.2.4 to 4.2.6)
- "LINE2" for AES (see sections 4.2.4 to 4.2.6)
- "MPX1" for MPX (see sections 4.2.3 and 4.2.6)
- "MPX2" for MPX (see sections 4.2.3 and 4.2.6)
- "PLAYER": µSD card (option)
- "GENE": internal generator

Use the “Enter” key to switch to edit mode, the “+” and “–” keys to adjust values and the “Enter” key to confirm.

```

1  G O T O
   M A I N -> I N P U T   S E L
  
```

Press the “+” key until you see this screen. When the Input Sel menu is selected, press “Enter” to return to the list of menus.

4.2.3. Setting the MPX inputs

```

      G O   T O
    -> M P X   I N >
  
```

Press the “+” key until you see the MPX In menu. Then press the “Enter” key.

```

1      M P X   I N
    -> M P X 1 >
  
```

Press the “Enter” key once more to set the MPX1 input.

```

2      M P X - I N -> M P X 1
    -> L E V E L : + 0 6 . 0 0
  
```

Browse through the MPX1 menu using the “+” and “–” keys to set the nominal level between -50 and +50 dBu,

Use the “Enter” key to switch to edit mode, the “+” and “–” keys to adjust values and the “Enter” key to confirm.

```

2      G O   T O
    -> M P X - I N      M P X 1
  
```

Press the “+” key until you see this screen. When the MPX-IN menu is selected, press “Enter” to return to main MPX menu and set the MPX2 input in the same way.

```

1      G O   T O
    -> M A I N      M P X - I N
  
```

To return to the main screen, press the “+” key until you see this screen. When the Main menu is selected, press “Enter” to return to the list of menus.

4.2.4. MPX configuration

```

      G O T O
-> S T E N C O D E R >
  
```

Press the “+” key until you see the ST Encoder menu. Then press the “Enter” key.

```

1      S T E N C O D E R
-> M O / S T : S T E R E O
  
```

Press once again the “Enter” key to set the audio type. Select what you need using “+” and “–” keys: STEREO or MONO.

```

1      G O T O
      M A I N -> C O D E R
  
```

Confirm with the “Enter” key and press “+” until you see this screen. When the CODER menu is selected, press “Enter” to return to the list of menus.

Confirm with the “Enter” key and press “+” until you see this screen. When the CODER menu is selected, press “Enter” to return to the list of menus.

```

      G O T O
-> S T E N C O D E R >
  
```

Press the “+” key until you see the Modulation menu.

```

      G O T O
-> M O D U L A T I O N >
  
```

Then press the “Enter” key.

```

1      M O D U L A T I O N
-> D E V M P X : 1 2 7 . 2
  
```

Browse through the Modulation menu using the “+” and “–” keys to set the total deviation between 0 and 150 kHz,

```

1      M O D U L A T I O N
-> D E V P I L O T : 1 8 . 4
  
```

set the pilot deviation between 0 and 25.5 kHz.

For each of these values, use the “Enter” key to switch to edit mode, the “+” and “–” keys to adjust values and the “Enter” key to confirm.

```

1      G O T O
      M A I N -> M O D U L A T I O N
  
```

Press the “+” key until you see this screen. When the Modulation menu is selected, press “Enter” to return to the list of menus.

4.2.5. Setting the analog or AES inputs

```

      G O T O
    -> L I N E 1 >
  
```

Press the “+” key until you see the Line1 (or Line2) menu. Then press the “Enter” key.

```

1  L I N E 1
  -> L E V E L : + 0 6 . 0 0
  
```

Browse through the Line1 (or Line2) menu using the “+” and “–” keys to set the nominal level between -50 and +50 dBu.

Use the “Enter” key to switch to edit mode, the “+” and “–” keys to adjust values and the “Enter” key to confirm.

```

1  G O T O
  M A I N   -> L I N E 1
  
```

Press the “+” key until you see this screen. When the Line1 (or Line2) menu is selected, press “Enter” to return to the list of menus.

Default transmitter pre-accentuation is 50 μ s. Depending on your country, you might need to switch it to 75 μ s (in the United States for instance). The Pre-accentuation parameter is only visible in Expert mode; you must therefore first change the front panel working mode:

```

 9 8 . 0 0 M H z      1 0 0 W
    -> E A S Y
  
```

Press the “+” key until you see the Easy menu. Then press the “Enter” key, “+” and “Enter” again to switch to Expert mode.

```

      G O T O
    -> L I N E 1 >
  
```

Go back to the Line1 menu. Press the “Enter” key then the “+” key to change the pre-accentuation.

```

1  L I N E 1
  -> P R E A C : 5 0
  
```

Use the “Enter” key to switch to edit mode, the “+” and “–” keys to adjust values and the “Enter” key to confirm.

```

1  G O T O
  -> M A I N   -> L I N E 1
  
```

Press the “+” key until you see this screen. When the Line1 (or Line2) menu is selected, press “Enter” to return to the list of menus.

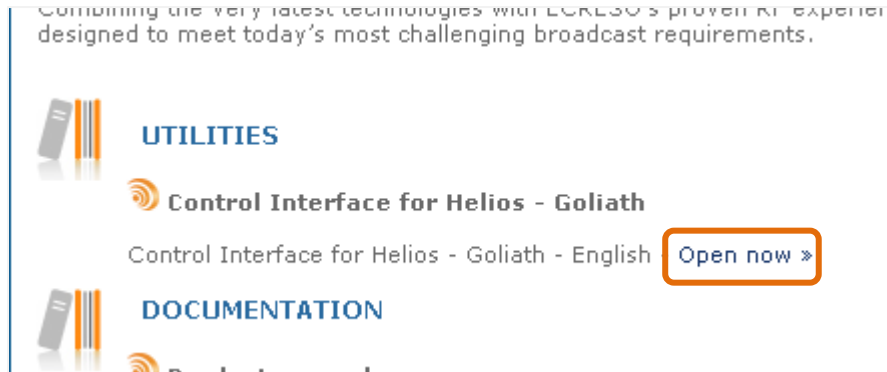
4.2.6. Getting on air

1. Disable the RF using the front panel RF button.
2. Make sure the RF indicator LED is off.
3. Disconnect the load and connect the antenna to the transmitter RF output.
4. Enable the RF again using the front panel RF button.

4.3. Using the PC application



4.3.1. Connecting with the control software application

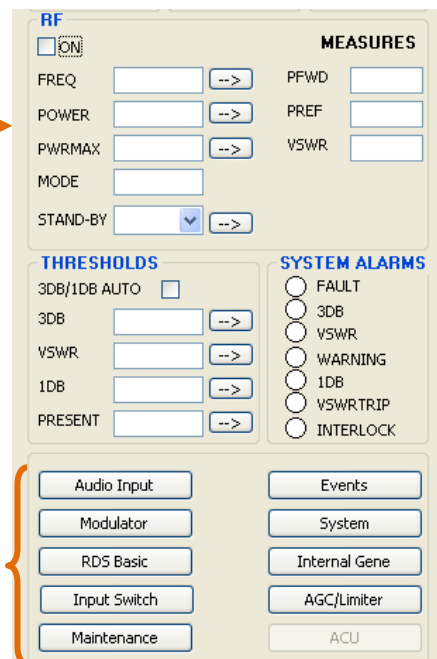
- On the PC, start the control software. This is a set-up tool that will allow you to quickly set and test your transmitter. It is available on the supplied CD.
 - On the transmitter's page, click the control interface link to download the zipped file to your PC.



- Extract the .exe file. You do not need to install it, simply double-click on ENGI_REV_xxx.exe to launch the application.
- Select the serial port connected to the Helios FM, and the port speed (9600 for the front panel connector).

4.3.2. Setting the transmitter

- Set the power (in W), the frequency (in MHz) and enable the RF. 
- To send a parameter value to the transmitter, click the login button; no password is set in factory. Click the  button to the right of the text zone.
- A set of buttons give access to other parameters. Click on one of them to open a window displaying associated parameters. The "Audio Input" and "Modulator" windows will enable input and MPX configuration.



4.3.3. Input selection

The input can be set to:

- Line1 for the analog inputs (see sections 4.3.4 to 4.3.6)
- Line2 for the AES (see sections 4.3.4 to 4.3.6)
- MPX1 and MPX2 inputs (see sections 4.3.3 and 4.3.6)
- Player: μ SD card (option)
- Internal generator

4.3.4. Setting the MPX inputs

Click the "Audio Input" button:

- Set the nominal level between -50 and +50 dBu

MPX1		MEASURES	
DRIVE	0.00 -->	PEAK	-62.05
LEVEL	12.00 -->	PRESENCE	NONE
		LOST	YES

MPX2		MEASURES	
DRIVE	0.00 -->	PEAK	-69.39
LEVEL	12.00 -->	PRESENCE	NONE
		LOST	YES

4.3.5. MPX configuration

Click the "Modulator" button:

- Set the audio type to:
 - STEREO
 - MONO
- Set the total deviation between 0 and 150 kHz
- Set the pilot deviation between 0 and 25.5 kHz

ST ENCODER	
MONO/STEREO	STEREO -->
INPUT SOURCE	-->
RDS SOURCE	INTERNAL -->
SCA SOURCE	MPX1 -->
RDS BACKUP	-->
RF[kHz]	
MPX	75.00 -->
AUDIO	63.90 -->
PILOT	7.1 -->
RDS	4.0 -->

4.3.6. Setting the analog or AES inputs

Click the "Audio Input" button:

- Set the nominal level between -50 and +50 dBu
- Set the pre-emphasis to 0, 50 or 75 μ s depending on your country (50 μ s in Europe, 75 μ s in the USA).

LINE1 (ANA)		MEASURES	
FILTER	15 -->	LEFT	-66.54
PREAC	50 -->	RIGHT	-64.23
DRIVE	0.00 -->	PRESENCE	NONE
RIGHT TRIM	0.00 -->	LOST	YES
LEVEL	12.00 -->		

LINE2 (AES)		MEASURES	
FILTER	15 -->	LEFT	-123.38
PREAC	50 -->	RIGHT	-123.38
DRIVE	0.00 -->	PRESENCE	NONE
RIGHT TRIM	0.00 -->	LOST	YES
LEVEL	-4.00 -->		

MPX1		MEASURES	
DRIVE	0.00 -->	PEAK	-62.05
LEVEL	12.00 -->	PRESENCE	NONE
		LOST	YES

4.3.7. Getting on air

1. Disable the RF using the front panel RF button.
2. Make sure the RF indicator LED is off.
3. Disconnect the load and connect the antenna to the transmitter RF output.
4. Enable the RF again using the front panel RF button.

4.4. With the TCP/IP option

4.4.1. Network configuration

If the optional IP board is present on the transmitter, first set the IP address with the front panel:

```
9 8 . 0 0 M H z      0 W
```

From the main screen, press the "Enter" key to display menus then the "+" key until you see the Network menu.

```
9 8 . 0 0 M H z      1 0 0 W
-> N E T W O R K >
```

Once you see this screen, press "Enter".

```
1 N E T W O R K -> A D R
-> 1 9 2 . 1 6 8 . 0 1 2 . 1 0 3
```

The IP address screen is displayed: press "Enter" to switch to edit mode. Use the "+" and "-" keys to adjust values and the "Enter" key to confirm.

```
1 N E T W O R K -> M A S K
-> 2 5 5 . 2 5 5 . 2 5 5 . 0 0 0
```

Press the "+" key to display the Netmask and modify it if needed. Press the "Enter" key to confirm.

4.4.2. Connecting to the web interface

Now the transmitter is set, connect it to the network.

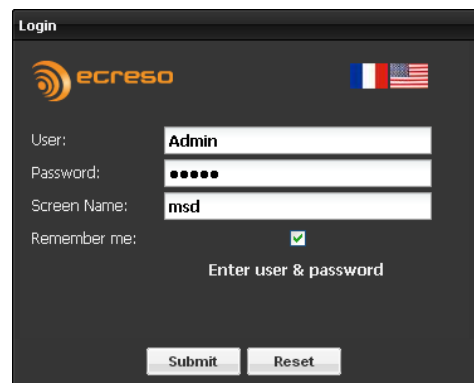
i *Though the web application is compatible with most browsers, performances vary greatly from on browser to another. For this reason, we recommend you use Google Chrome. You may also use Google Chrome Portable available on the Ecreso CD; this version can work without being installed on your PC (it can be on a flash drive).*

Open a web browser and enter in the address bar the transmitter's IP address such as it was set above.

Select the language if necessary.

Enter the user name and password (default: **Admin / admin**) and the screen name of your choice. It is used to communicate with other connected users.

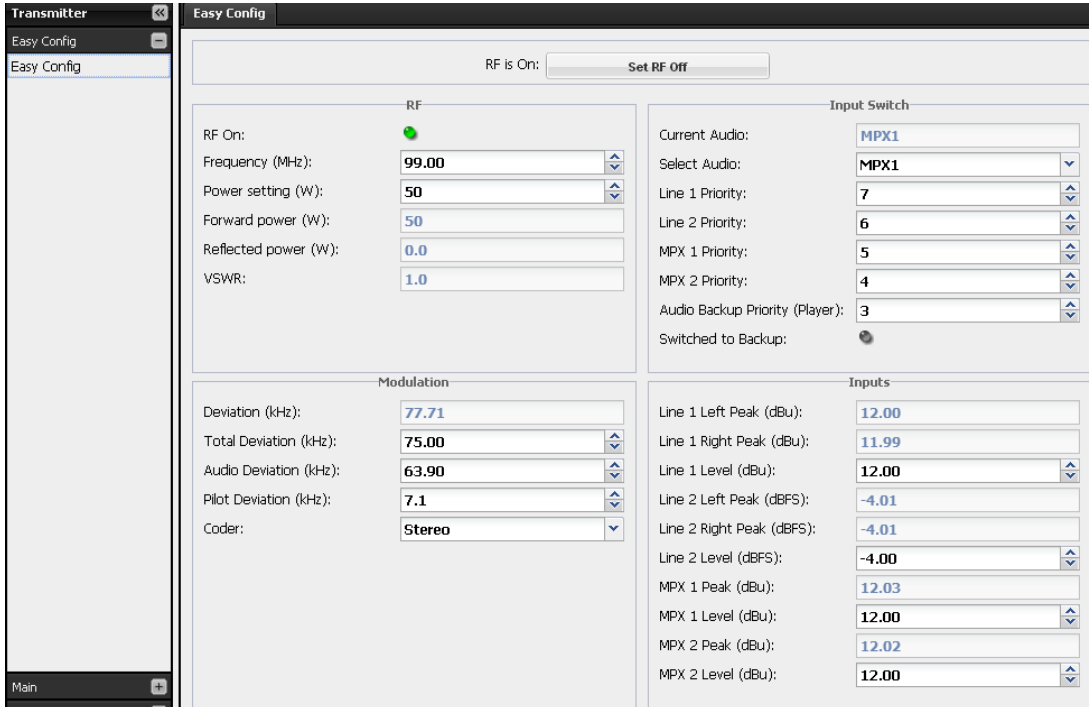
You can now access the web interface.



4.4.3. Configuring the transmitter



Click the button in the tool bar to access the transmitter configuration and display the 'Easy Config' page.



Basic configuration can be managed on this single page:

- Power, frequency and RF on
- Input priority setting
- MPX configuration
- Input configuration

Default transmitter pre-accentuation is 50 μ s. Depending on your country, you might need to switch it to 75 μ s (in the United States for instance). The Pre-accentuation parameter is available in the Input Source section.



Once values have been changed, click the button to save the new settings.

4.4.4. Getting on air

1. Disable the RF using the front panel RF button.
2. Make sure the RF indicator LED is off.
3. Disconnect the load and connect the antenna to the transmitter RF output.
4. Enable the RF again using the front panel RF button.


5. MAIN PARAMETERS DESCRIPTION

5.1. Overview

Four interfaces are available to set the transmitter:

- The front panel menus for local configuration – see section 6
- The serial/Telnet commands for local or remote configuration – see section 7
- The Engi PC application for local or remote configuration – see section 8
- The embedded web site for remote configuration – see section 9

In all cases, the parameters are the same and they are described below.

 *Remote configuration can only be done if the transmitter is fitted with a TCP/IP board.*

5.2. TX/RF parameters

These parameters are available as:

Front panel *	TX PARAMETERS menu	see section 6.3.4
Serial commands	TX and CONF	see sections 7.2.3 and 7.2.4
Engi PC application	Main page	see section 8.2.2
Embedded web site	Transmitter/Main/Parameter page	see section 9.4.2

** Parameters followed by a star (*) are not available on the front panel.*

3 DB (TX.3DB)

With this parameter, set the triggering threshold for the 3 dB alarm. Default value is half the transmitter's power (also when in auto mode).

From 0 to 9999 dB (depending on the transmitter's power)

MAX VSWR (TX.VSWR.MAX)

With this parameter, set the triggering threshold for the VSWR alarm.

From 0 to 99.9

INTERNAL REFLECTED LIMIT (STAT.PREFMAX) *

This parameter indicates whether the reflected power went over the maximum limit. Depending on the configuration of the CONF.VSWR_TRIG command, it may trigger a VSWR fault.

Off/On

VSWR TRIP (TX.VSWRTRIP)

With this parameter, enable or disable the reflected power safety. In case the VSWR is too high (reflected power greater than the maximum threshold), RF is shut off and automatically starts again. If the fault is still present, the cut/restart process is repeated 3 times. If the 3rd time, it is still present, the transmitter is cut for good.

Off/On

RF PRESENT (TX.RFPRESENT) *

This parameters indicates whether RF is present at a level superior to the threshold set by the command TX.RFPRESENT.MIN (0 by default). When not present, no alarm is triggered.

PRES/NOT PRES

5.3. Input switch parameters

These parameters are available as:

Front panel	INPUT SWITCH menu	see section 6.3.6
Serial commands	INPUT and CONF	see sections 7.2.6 and 7.2.4
Engi PC application	Input Switch page	see section 8.2.2
Embedded web site	Transmitter/Input Select pages	see section 9.4.4

i Serial commands and the web site are managed differently: the PRIO parameter for each input sets the selection order for the various audio sources.

MODE

With this parameter, choose whether audio source selection is done manually or automatically. In manual mode, the user selected audio source is used regardless of the state of the audio source. In auto mode, the effective audio source depends directly on the switching configuration and on the channels selected as Main or as Backup (1, 2 or 3).

MANU or AUTO

MAIN

With this parameter, select the main audio source.

LINE1, LINE2, MPX1, MPX2, PLAYER or GENE

BACKUP 1 / BACKUP 2 / BACKUP 3

With this parameters, select the audio sources which the transmitter will switch to in case of issue.

LINE1, LINE2, MPX1, MPX2, PLAYER or GENE

LINE 1 or 2 / MPX / PLAYER parameters

These parameters are specifically available as INPUT.LINE1.SW / INPUT.LINE2.SW / INPUT.MPX.SW / INPUT.PLAYER.SW serial commands (see section 7.2.5).

THRESHOLD (INPUT.xx.SW.THRESH) – read/write

With this parameter, set the silence threshold level on the selected channel. In dBr when units are in relative mode; in dBFS or dBu when units are in absolute mode (see definition of modes section 5.14).

From -90 to 0 dBr

SILENCE (INPUT.xx.SW.SILENCE) – read/write

With this parameter, select the channel (L / R / L or R / L and R) on which silence detection must be performed (not available on the MPX sub-menus).

L, R, ANY or BOTH

DELAY (INPUT.xx.SW.DELAY) – read/write

With this parameters, set the switching delay in seconds when audio loss occurs.

From 1 to 120 s

BACK DELAY (INPUT.xx.SW.BACKDELAY) – read/write

With this parameters, set the delay before returning to the highest priority channel, in seconds.

From 0 to 30 s

5.4. Line 1 (ANA) parameters

These parameters are available as:

Front panel	LINE 1 menu	see section 6.3.7
Serial commands	INPUT.LINE1	see section 7.2.6
Engi PC application	Audio Input page	see section 8.2.2
Embedded web site	Transmitter/Input Source/Line1 page	see section 9.4.5

PRESENCE (INPUT.LINE1.PRESENCE) – read only

This parameter indicates the presence of audio signal at the input: none, left, right or L&R.

NONE, L, R, L+R

LEVEL (INPUT.LINE1.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the LINE1 input. For example, if the audio peak from the source is +6 dBu, this parameter must be set to +6 dBu for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the LINE1 LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -18 dBu to +18 dBu

DRIVE (INPUT.LINE1.DRIVE) – read/write

With this parameter, you can slightly compensate the input audio level. It directly affects the final deviation. A negative value decreases the deviation; a positive value can increase the deviation and/or cause the MPX hard clipper to be used (if enabled) which in turn may lead to audio distortion. We recommend you leave it at 0 dB.

From -6 dB to +6 dB

RIGHT TRIM (INPUT.LINE1.TRIM) – read/write

With this parameter, you can correct the balance between the Left and Right channels. However, it is better to look for and correct the cause of a lack of balance (before the transmitter) rather than correcting it at this stage. A positive value increases the Right channel; a negative value decreases the Right channel level. It is best to leave it at 0 dB.

From -3 dB to +3 dB

FILTER (INPUT.LINE1.FLT) – read/write

This parameter is crucial: it set the low-pass filter applied on the audio input. The FM bandwidth is limited to 15 kHz, so **the filter must be set to 15 kHz for the FM**. Digital technology and the quality of the internal stereo encoder make it possible to set the filter at 16 or 17 kHz while maintaining an acceptable pilot protection. Select 0 kHz to disable the filter: this solution can be used in mono operation (in stereo operation, the incidence on the MPX signal and its sub-carrier would be too great) or when a 15 kHz filter is already used upstream as with an FM processor for instance. In this specific situation, you may also use 2 filters, the standard 15 kHz standard filter with the external processor, plus the 16 kHz transmitter filter. The listeners will hear the processor's filter; the internal filter will take the relay in case of issue with the processor.

0, 15, 16 or 17 kHz

PREACC (INPUT.LINE1.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 μ s is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 μ s in Europe, 75 μ s in the USA.

0, 50 or 75 μ s

5.5. Line 2 (AES) parameters

These parameters are available as:

Front panel	LINE 2 menu	see section 6.3.7
Serial commands	INPUT.LINE2	see section 7.2.6
Engi PC application	Audio Input page	see section 8.2.2
Embedded web site	Transmitter/Input Source/Line2 page	see section 9.4.5



They are identical to LINE1 parameters, except for the level.

LEVEL (INPUT.LINE2.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the LINE2 input. For example, if the audio peak from the source is -4 dBFS, this parameter must be set to -4 dBFS for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the LINE2 LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -20 dBFS to 0 dBFS

5.6. MPX parameters

MPX1 or MPX2

These parameters are available as:

Front panel	MPX IN menu	see section 6.3.8
Serial commands	INPUT.MPX1 / INPUT.MPX2	see sections 7.2.6
Engi PC application	Audio Input page	see section 8.2.2
Embedded web site	Transmitter/Input Source/MPX page	see section 9.4.5

PRESENCE (INPUT.MPXn.PRESENCE) – read only

Indique la composition du signal sur l'entrée MPXn.

MO (mono), MO+R (mono+RDS), MO+R+S (mono+RDS+SCA), ST (stereo), ST+R (stereo+RDS)
 ou ST+R+S (stereo+RDS+SCA)

LEVEL (INPUT.MPXn.LEVEL) – read/write

This parameter is the max audio peak in dBu that can come from the transmitter on the MPX input. For example, if the audio peak from the source is +6 dBu, this parameter must be set to +6 dBu for optimal operation. If you do not know the audio source level, you may use an audio analyzer or display first level measurements on the front panel to read the MPXn LEVEL. Be aware that if the level is poorly set the deviation may become too low or too high. This level is also called nominal level, i.e. the level producing the deviation as set in the Modulation menu.

From -18 dBu to +18 dBu

DRIVE (INPUT.MPXn.DRIVE) – read/write

With this parameter, you can slightly compensate the input audio level. It directly affects the final deviation. A negative value decreases the deviation; a positive value can increase the deviation and/or cause the MPX hard clipper to be used (if enabled) which in turn may lead to audio distortion. We recommend you leave it at 0 dB.

From -6 dB to +6 dB

RMS (INPUT.MPXn.RMS) – read only

This parameter indicates the average value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

PEAK (INPUT.MPXn.PEAK) – read only


This parameter indicates the peak value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

5.7. Player parameters (audio backup)

These parameters are available as:


Front panel	PLAYER menu	see section 6.3.7
Serial commands	INPUT.PLAYER	see section 7.2.6
Engi PC application	Audio Input page	see section 8.2.2
Embedded web site	Transmitter/Input Source/Audio backup page	see section 9.4.5

 They are identical to LINE2 parameters.

5.8. Audio generator parameters

These parameters are available as:

Front panel	AUDIO GENE menu	see section 6.3.9
Serial commands	INPUT.AUDIOGEN	see section 7.2.6
Engi PC application	Audio Input page	see section 8.2.2
Embedded web site	Transmitter/Input Source/Generator page	see section 9.4.5

 The audio generator is a multiplex channel and is therefore not affected by the stereo encoder parameters.

STATE (INPUT.AUDIOGEN.STATE) – read/write

With this parameter, set the type of MPX signal generated by the internal generator.

OFF, PILOT, L, R, L+R (mono) or L-R (stereo)

PREAC (INPUT.AUDIOGEN.PREAC) – read/write

With this parameter, set the pre-emphasis. Select 0 μ s is the audio signal is pre-emphasized before getting to the transmitter. Otherwise, select according to the country: 50 μ s in Europe, 75 μ s in the USA.

0, 50 or 75 μ s

LEVEL (INPUT.AUDIOGEN.LEVEL) – read/write

With this parameter, set the internal generator audio level.

From -100.00 to 12.00 dBFS

FREQ (INPUT.AUDIOGEN.FREQ) – read/write

With this parameter, set the internal generator audio frequency.

From 0 to 100000.00 Hz

5.9. Modulation parameters

These parameters are available as:

Front panel	MODULATION menu	see section 6.3.10
Serial commands	MEAS.DEV and CONF	see sections 7.2.2 and 7.2.4
Engi PC application	Modulator page	see section 8.2.2
Embedded web site	Transmitter/Modulation pages	see section 9.4.3

PEAK (MEAS.DEV.RMS) – read only

This parameter indicates the current value of the transmitted signal's excursion in kHz.

From -150 to +150 kHz

DEV MPX (CONF.DEV.MPX) – read/write

With this parameter, set the maximum MPX deviation in kHz generated when the audio source is at the nominal level (the nominal level is set with the LEVEL parameter of the menus: LINE1, LINE2, MPX1 or MPX2). It is often set at 75 kHz but this value may vary according to the country and relevant regulatory authorities. To ensure the sub-carrier levels remain stable, this parameter directly changes the audio deviation.

From 0 to 150.00 kHz

DEV AUDIO (CONF.DEV.AUDIO) – read/write

With this parameter, set the maximum audio deviation in kHz generated when the audio source is at the nominal level (the nominal level is set with the LEVEL parameter of the menus: LINE1, LINE2, MPX1 or MPX2). The audio deviation is set automatically when the MPX deviation parameter is set; however, it is possible to set the audio deviation rather than the MPX deviation. Increasing or decreasing the audio deviation affects the total deviation and thus automatically adjusts the MPX deviation. Make sure to avoid overmodulation.

From 0 to 150.00 kHz

DEV PILOT (CONF.DEV.PILOT) – read/write

With this parameter, set the 19 kHz pilot deviation. For countries modulating at 75 kHz, the pilot deviation should be 10% of the total deviation, i.e. 7.5 kHz without RDS or 7.1 kHz if RDS is used.

From 0 to 25.5 kHz

DEV RDS (CONF.DEV.RDS) – read/write

With this parameter, set the RDS sub-carrier deviation. The most widely used value is 4 kHz.

From 0 to 25.5 kHz

DEV SCA (CONF.DEV.SCA) – read/write

With this parameter, set the SCA deviation (auxiliary sub-carrier other than RDS), as needed.

From 0 to 25.5 kHz

Interaction between the various components according to the input type:

In all cases described below, the transmitter configuration is as follows:

Audio = 67.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

In the case of audio inputs (analog or AES), the set MPX represents the total of audio, pilot and RDS. If the RDS is disabled, the audio is automatically adjusted with +4 kHz.

Ex 1: set MPX = 75 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

If the RDS is enabled: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

If the RDS is disabled: Audio = 63.5 + 4 = 67.5 kHz

Pilot = 7.5 kHz

In the case of MPX inputs, if the RDS is disabled, **the audio cannot be adjusted.**

Ex 2: inject stereo MPX + RDS with:

Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz.

If the RDS is disabled: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS on the MPX input: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

With internal RDS: Audio = 63.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

Ex 3: inject stereo MPX with:

Audio = 67.5 kHz

Pilot = 7.5 kHz

If the RDS is disabled: Audio = 67.5 kHz

Pilot = 7.5 kHz

With internal RDS: Audio = 67.5 kHz

Pilot = 7.5 kHz

RDS = 4.0 kHz

! The total modulation 67,5+7,5+4,0 = 79 kHz is too high!

5.10. Stereo Encoder parameters

These parameters are available as:

Front panel	STEREO ENCODER menu	see section 6.3.11
Serial commands	CODER and CONF	see sections 7.2.7 and 7.2.4
Engi PC application	Modulator page	see section 8.2.2
Embedded web site	Transmitter/Modulation pages	see section 9.4.3

MO/ST (CODER.MOST) – read/write

With this parameter, set the stereo generator in mono or stereo mode. For mono, there are 3 options: Left channel broadcast in mono (Mono_L), right channel broadcast in mono (Mono_R), the sum Left+Right broadcast in mono (Mono). Otherwise left and right channels are broadcasted in stereo.

STEREO, MONO, MONO_L or MONO_R

AUDIO CH (CODER.SELECT.AUDIO) – read only

This parameter indicates the channel used by the modulator for the audio, as set with the INPUT.SELECT menu.

NONE, AUTO, LINE1, LINE2, MPX1, MPX2, PLAYER or GENE

PHI 19k (CONF.PHASE.PILOT) – read/write

With this parameter, set the pilot sub-carrier phase. We recommend setting it at 0°.

De -180 à +180°

19k OUT LEVEL (CODER.19KOUT.LEVEL) – read/write

With this parameter, enable/disable the rear panel 19 kHz clock and set its output level. 0=off; between 1 and 7: set a level between 0.9 and 1.1 V peak-to-peak. 5 corresponds to 1 V.

From 0 to 8 V

5.11. RDS / SCA encoder parameters

These parameters are available as:

Front panel	RDS / SCA ENCODER menu	see section 6.3.12
Serial commands	CODER and CONF	see sections 7.2.7 and 7.2.4
Engi PC application	Modulator page	see section 8.2.2
Embedded web site	Transmitter/Modulation pages	see section 9.4.3

RDS CH (CODER.CURRENT.RDS) – read only

This parameter indicates the channel used by the modulator for the RDS, as set with the RDS IN parameter.

NONE, MPX1, MPX2 or INTERNAL

RDS STATE (CONF.STATE.RDS) – read/write

With this parameter, enable or disable the RDS. When the RDS is enabled or disabled, the RDS deviation is automatically subtracted from or added to the audio deviation to maintain the same total deviation.

Off/On

RDS IN (CODER.SELECT.RDS) – read/write

With this parameter, set the RDS component source of the broadcast signal either with an external source or with the internal encoder.

MPX1, MPX2 or INTERNAL

PHI RDS (CONF.PHASE.RDS) – read/write

With this parameter, set the RDS sub-carrier phase in relation to the pilot sub-carrier. We recommend setting it at 90°.

From -180 à to180°

SCA STATE (CONF.STATE.SCA) – read/write

With this parameter, enable or disable the SCA. When the SCA is enabled or disabled, the SCA deviation is automatically subtracted from or added to the audio deviation to maintain the same total deviation.

Off/On

SCA IN (CODER.SELECT.SCA) – read/write

With this parameter, set the SCA component source of the broadcast signal

MPX1 or MPX2

5.12. FM limiter parameters

These parameters are available as:

Front panel	FM LIMITER menu	see section 6.3.13
Serial commands	CONF	see section 7.2.4
Engi PC application	Modulator page	see section 8.2.2
Embedded web site	Transmitter/Modulation/AGC Limiter page	see section 9.4.3



Without the FM Limiter option, the CLIP parameter is the only available parameter.

CLIP (CONF.DEV.CLIP) – read/write

With this parameter, set the MPX hard clipper to prevent any possibility of overmodulation on the modulator itself. This process is carried out digitally right before the RF generation, and is therefore enabled on all the inputs. If the deviation is greater than the configured value (in kHz), the MPX hard clipper is automatically enabled. Unlike FM limiters/clippers used in audio processing, this clipper cannot be used continuously for it generates a noticeable audio distortion. It is therefore best to set it at 0, or at the maximum authorized deviation, plus a few kHz to ensure additional security with the audio processor.

From 0 to 200 kHz

The FM Limiter option includes 3 processing stages:

- **AGC:** The Automatic Gain Control purpose is to compensate level variations applied to the selected audio input. The algorithm is wide-band for maximum audio fidelity and gated to avoid noise and unwanted level corrections.
- **FM LIMITER:** The FM Limiter prevents from over-modulation by limiting the audio peaks.
- **MPX POWER LIMITER:** The MPX Power Limiter is based on to the ITU-R 412 standard applied on some FM markets.

CLIP STATE (CONF.STATE.CLIP) – read/write

This parameter enables or disables the clipper. Default: off.

Off/On

AGC STATE (CONF.AGC.STATE) – read/write

This parameter enables or disables the Automatic Gain Control processing stage. Default: off.

Off/On

AGC DRIVE (CONF.AGC.DRIVE) – read/write

With this parameter, load more or less the AGC input. At 0 dB gain reduction will be applied when the transmitter is fed by an audio level higher than the input level setting. Increasing the drive will add gain reductions, while low audio levels will be increased (more processed). Default value: +4 dB.

From 0 to 12 dBu

AGC ATTACK (CONF.AGC.ATT) – read/write

With this parameter, tune in dB/s the AGC reactivity speed to a volume increase. A high setting is recommended to protect the FM limiter stage against high audio levels and possible audio distortions. Default value: 8641dB/s

From 0.1 to 10 000 dB/s

AGC RELEASE (CONF.AGC.REL) – read/write

With this parameter, tune in dB/s the AGC correction speed to a volume decrease. A low setting is recommended to slowly increase the gain in case of low audio level and maintain maximum audio fidelity. Set this parameter to 1dB/s or lower for more transparency; 2 or 3 dB/s will give a slightly more processed result. Default value: 1 dB/s

From 0 to 6 dB/s

AGC GATE THRESHOLD (CONF.AGC.THR) – read/write

This threshold will freeze the AGC operation when the audio level is below the user-set limit. This function limits floor noise and prevents unwanted AGC processing on the audio. Default value: -20 dB

From -100 to 0 dB

LIMITER STATE (CONF.STATE.LIMIT) – read/write

This parameter enables or disables the FM Limiter stage. Default: off.

Off/On

LIMITER DRIVE (CONF.DRIVE.LIMIT) – read/write

With this parameter, load more or less the FM limiter input. CAUTION: always be aware that increasing the FM limiter drive may lead to noticeable distortion. Setting the limiter drive at 0 dB is recommended to use the FM Limiter as a protection stage against over-modulation.

From 0 to 1 dB

MPX POWER LIMITER STATE (CONF.STATE.MPXPWR) – read/write

This parameter enables or disables the MPX Power Limiter processing stage. Do not activate the MPX power reduction if no standard requires you to do it, it could have a negative impact on the sought after sound level. Default: off.

Off/On

MPX POWER LIMITER LEVEL (CONF.DEV.MPXPWR) – read/write


Set the maximum authorized MPX Power. Default value: 3 dB.

From -3 to -10 dB

5.13. RDS parameters

These parameters are available as:

Front panel	RDS menu	see section 6.3.14
Serial commands	RDS	see section 7.2.8
Engi PC application	RDS page	see section 8.2.2
Embedded web site	RDS pages	see section 9.5

 With the Basic RDS option, configure up to 2 DSNs each with a main PSN. Among other things, the DSNs allow fast and easy changing of the encoder settings remotely.

 Note: the RDS is enabled with the RDS/SCA ENCODER parameters.

CURRENT MAIN (RDS.DSN)

This parameter indicates the current DSN number.

MAIN DSN**PI** (RDS.MAINDSN.PI) – read/write

With this parameter, set the PI code (Program Identifier) used by RDS receivers to identify the station while searching for a frequency using AF or EON-AF codes.

4-digit hexadecimal code

PTY (RDS.MAINDSN.PTY) – read/write

With this parameter, set the PTY (Program Type). Select on 32 RDS or RDBS preset codes as given in the table below.

From 0 to 31

PTY code	RDS Programme type (EU)	RBDS Program type (USA)
0	No programme type or undefined	No program type or undefined
1	News	News
2	Current affairs	Information
3	Information	Sports
4	Sport	Talk
5	Education	Rock
6	Drama	Classic Rock
7	Culture	Adult Hits
8	Science	Soft Rock
9	Varied	Top 40
10	Pop Music	Country
11	Rock Music	Oldies
12	<u>M.O.R. Music</u>	Soft
13	Light classical	Nostalgia
14	Serious classical	Jazz
15	Other Music	Classical
16	Weather	Rhythm and Blues
17	Finance	Soft Rhythm and Blues
18	Children's programmes	Language
19	Social Affairs	Religious Music
20	Religion	Religious Talk
21	Phone In	Personality
22	Travel	Public
23	Leisure	College
24	Jazz Music	Unassigned
25	Country Music	Unassigned
26	National Music	Unassigned
27	Oldies Music	Unassigned
28	Folk Music	Unassigned
29	Documentary	Weather
30	Alarm Test	Emergency Test
31	Alarm	Emergency

PS (RDS.MAINDSN.PS) – read/write

With this parameter, set the PS (Program Station)

8-digit code

MS (RDS.MAINDSN.MS) – read/write

With this parameter, indicate whether the program is Music or Speech to automatically adjust the sound level of the RDS receiver.

0 (music) or 1 (speech)

DI (RDS.MAINDSN.DI) – read/write

With this parameter, set the DI (Decoder Identification) which enables an RDS receiver's audio level to be adjusted according to the type of received audio (mono or stereo, static or dynamic PTY, compressed or not, with or without artificial head).

From 0 to 15, as indicated in the table below.

	Mono / Stereo	With / Without artificial head	Compressed / non compressed	static / dynamic PTY
0	mono	without	non	static
1	mono	without	non	dynamic
2	mono	without	compressed	static
3	mono	without	compressed	dynamic
4	mono	with	non	static
5	mono	with	non	dynamic
6	mono	with	compressed	static
7	mono	with	compressed	dynamic
8	stereo	without	non	static
9	stereo	without	non	dynamic
10	stereo	without	compressed	static
11	stereo	without	compressed	dynamic
12	stereo	with	non	static
13	stereo	with	non	dynamic
14	stereo	with	compressed	static
15	stereo	with	compressed	dynamic

TA/TP (RDS.MAINDSN.TATP / RDS.MAINDSN.TA / RDS.MAINDSN.TA) – read/write

With this parameter, enable or disable the TA (Traffic Announcement) / TP (Traffic Program). Enabling the TA instantaneously switches an RDS receiver onto road information reports; at the end of the report, the receiver will automatically go back to its former operating state. Enabling the TP shows RDS receivers that the allocated station is likely to broadcast road information. You may enable both the TA and the TP, the TP only or neither.

TATP, TP or OFF

AF (RDS.MAINDSN.AF) – read/write

With this parameter, set up to 25 alternative frequencies in MHz with the method A. A RDS receiver will shift to an alternative frequency when the set frequency is no longer properly received.

XX,XX, ...,XX

RT (RDS.MAINDSN.RT) – read/write

With this parameter, display and set the radiotext, function which enables text messages to be broadcast in groups of 64 characters. RDS receiver can only benefit from this function if fitted with a specific display (home receivers, Smartphone mobile receivers). The RT function cannot be used on car radios as road safety commissions have forbidden its use on board a vehicle.

GS (RDS.MAINDSN.GS) – read/write

With this parameter, set the group sequence (32 max) which must include at least one group 0A.

XX,XX, ...,XX

Parameters of the ALT DSN are identical to those of the MAIN DSN; for serial commands, use ALT instead of MAIN.

5.14. System parameters

These parameters are available as:

Serial commands	SYS	see section 7.2.1
Engi PC application	Input Switch Page	see section 8.2.2
Embedded web site	System\Product\Configuration Page	see section 9.7.2

UNIT (SYS.UNIT) – read/write

This parameter sets the input mode for audio silence detection thresholds on all the inputs. With the Relative mode, level, drive and trim values are given in dBr. In Absolute mode, these values are given in dBu or dBFS and can be positive. Input levels affect set thresholds; thresholds applied to left and right, and to MPX1 and MPX2 can differ; however, only left and MPX1 threshold can be set. Default value: RELATIVE.

ABSOLUTE or RELATIVE

6. FRONT SCREEN USE

6.1. Overview

The transmitter can be entirely set using the front panel application.

For audio configuration you will use the following menus:

- **Input Switch:** to select the main audio source and the secondary audio sources and to set switching criteria between these sources.
- **Line1 / Line2 / MPX1 / MPX2 / Player / Audio Gene:** to set levels and processes for each source.
- **Modulation:** to set the deviation for each sub-carrier of the multiplex signal. In this menu you may also enable RDS and SCA.
- **Stereo Encoder:** to choose the content of stereo sub-carrier of the multiplex signal.
- **RDS/SCA Encoder:** to choose the content of the RDS and SCA sub-carrier of the multiplex signal.
- **RDS:** to set the RDS.

The default mode for the transmitter is the “Easy” mode: only menus required for basic configuration are available. For instance, the RDS menu mentioned above is not visible.


To display all menus, simply switch to “Expert” mode:

```

  9 8 . 0 0 M H z      1 0 0 W
    -> E A S Y
  
```

From the main screen, press the “Enter” key to display the menu and press the “+” key until you see the Easy menu. Then press the “Enter” key, “+” and “Enter” again to switch to Expert mode.




On the menu representations section 6.2, “Easy” menus are in green and “Expert” menus are in orange.

 On startup, the screen displays the name of the unit, its software release and its serial number.

6.2. Working principle

Three keys allow you to browse through the menus:



With the  and  keys, go from one screen to the next or rather from one command to the next: if 2 commands are available on a single screen, press  twice to go to the next screen.

A command is selected when an arrow is visible before its name.

Example:

```



  1  F R E Q      P F W D
    -> 9 8 . 0 0      7 5 0
  
```

The frequency is selected

```

  1  F R E Q      P F W D
    9 8 . 0 0      -> 7 5 0
  
```

The power is selected

The  and  keys are also used to adjust values after the edit mode has been enabled.

To adjust a value, set each character at a time. Text values are set from left to right; number values are set from right to left.

The  button is used to:

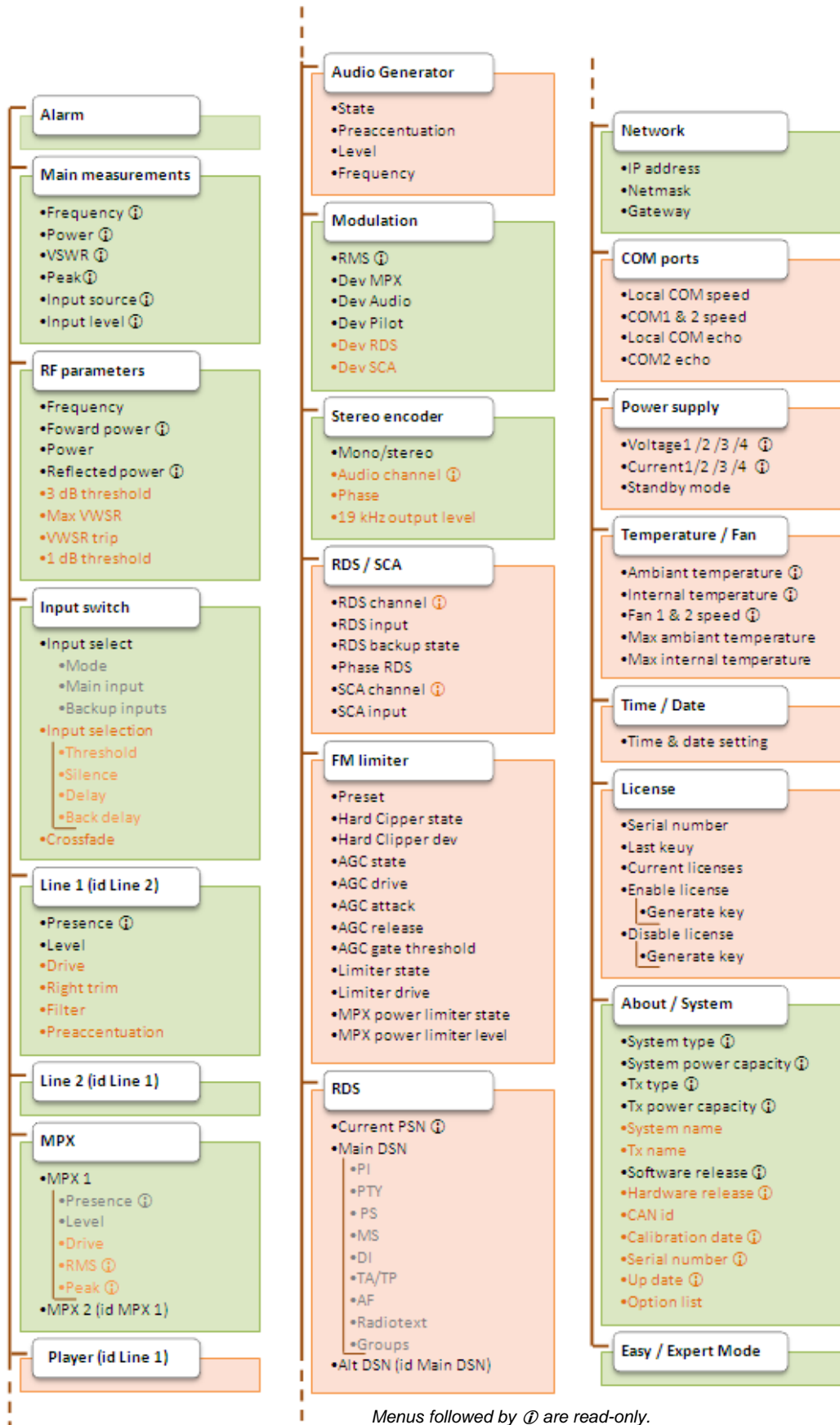
- Access a lower level menu
- Enable the edit mode for parameters that can be modified
- Confirm a new value
- Return to the higher level menu.
- Return to the main screen when pressed for a few seconds.

Some menus include sub-menus. To make it easier to browse through the menus and locate the information, a small number is visible on the top left of the screen; it gives you the level of the menu you are viewing (**1** or **2**).

If a text string is longer than the screen, press the  key to access the text string and  to scroll.

6.3. Structure of the menus

6.3.1. Overview

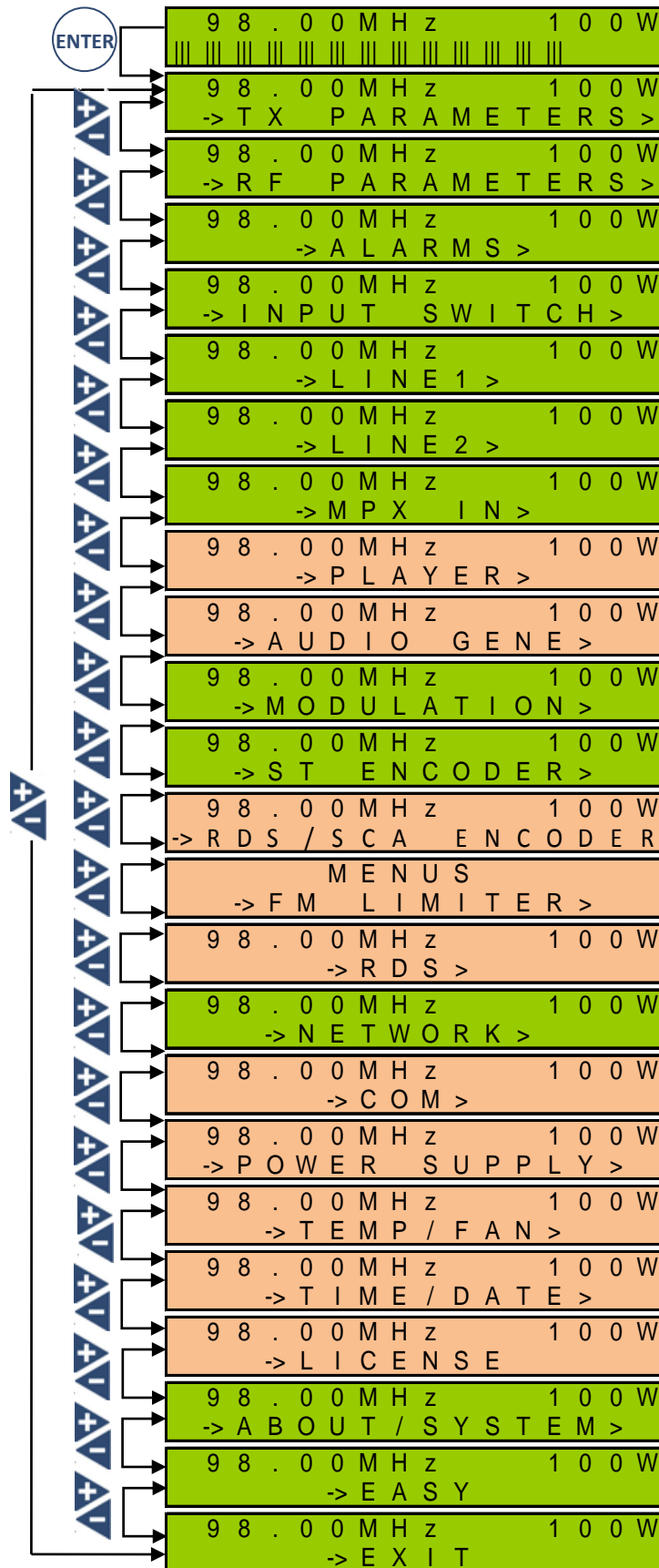


Menus followed by ⓘ are read-only.

The Alarm menu only appears when at least one alarm is active.

Menu and menu items in orange are only visible in Expert mode.

6.3.3. First level menus



The arrow > at the end of the 2nd line indicates there is a sub-menu. Press the "Enter" key to access it.

Available menus vary depending on the options actually implemented on the transmitter, and its state.

Menus in orange are only visible in Expert mode

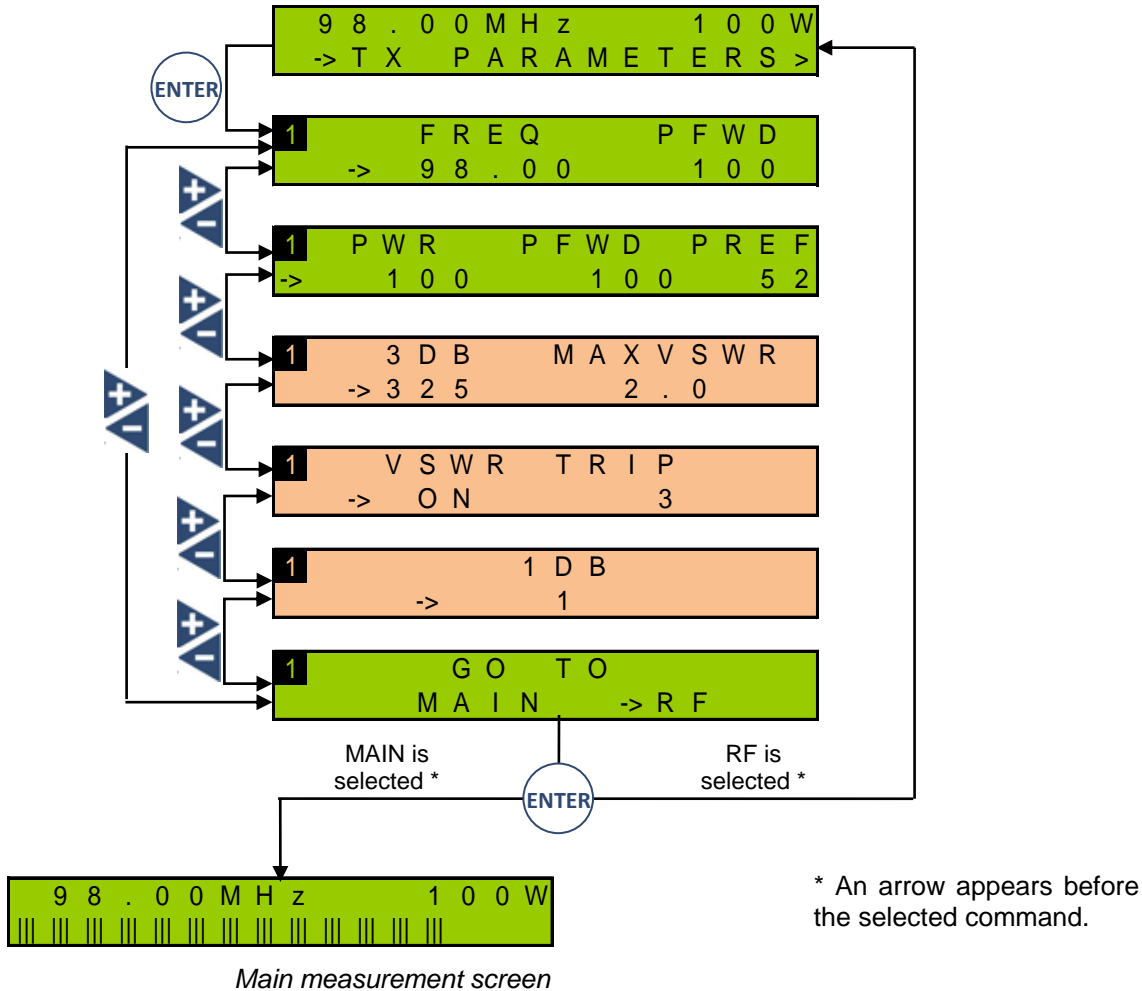
Each menu is detailed in the following pages.

6.3.4. TX PARAMETERS / RF PARAMETERS Menus

Both menus include the same parameters but their scope is different:



- The TX PARAMETERS menu pertains to the whole transmitter
- The RF PARAMETERS menu pertains to the Helios FM 20/100W only.

On a compact Helios FM, the TX PARAMETERS menu is not present.




6.3.5. ALARMS Menu

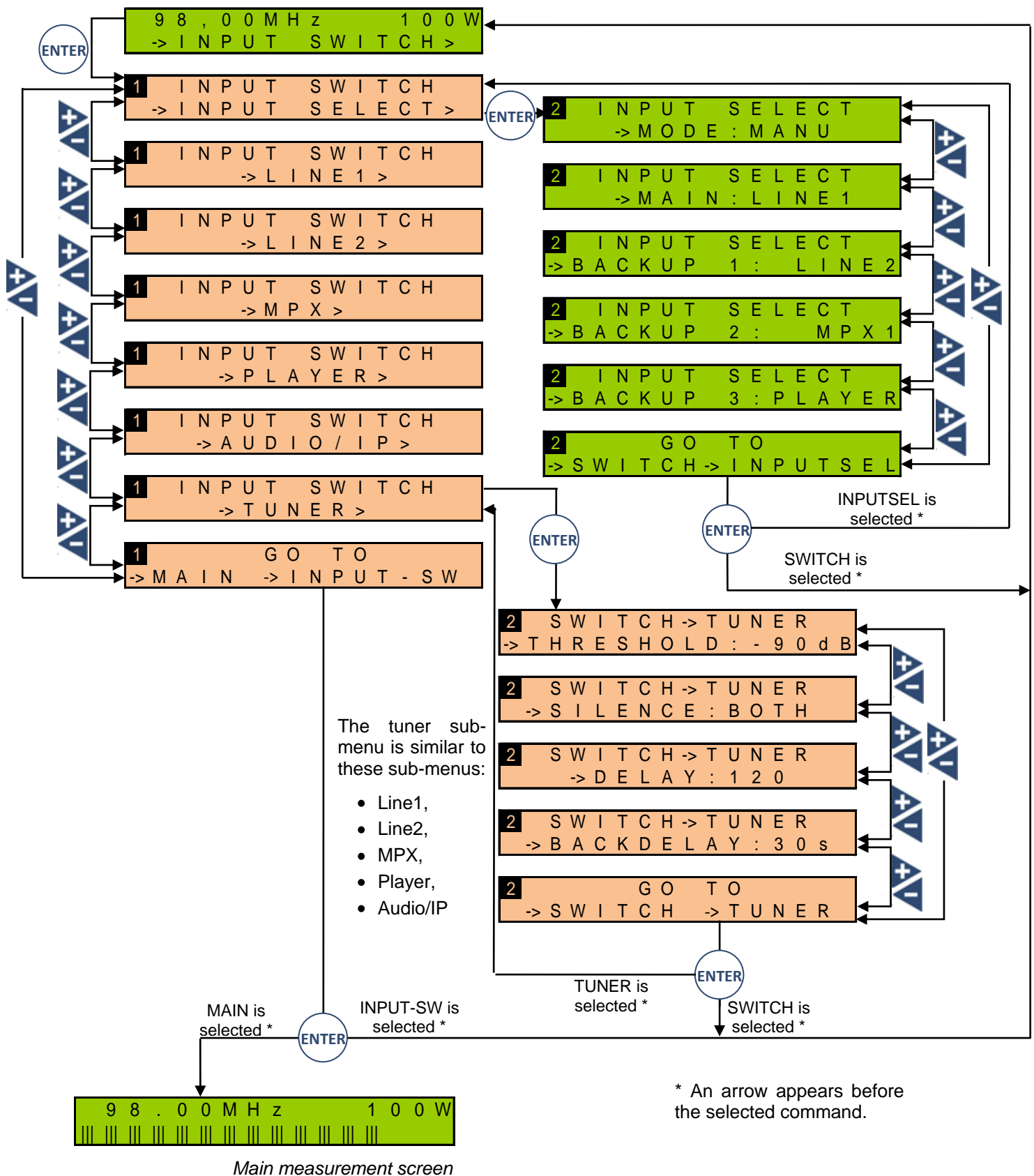
1 0 4 . 0 5 M H z 1 0 0 W
-> A L A R M S >

This read-only menu is only visible if alarms are present. It then displays one screen per current alarm: press the  key then the  key to scroll through them.

Alarms are described in section 7.2.5.

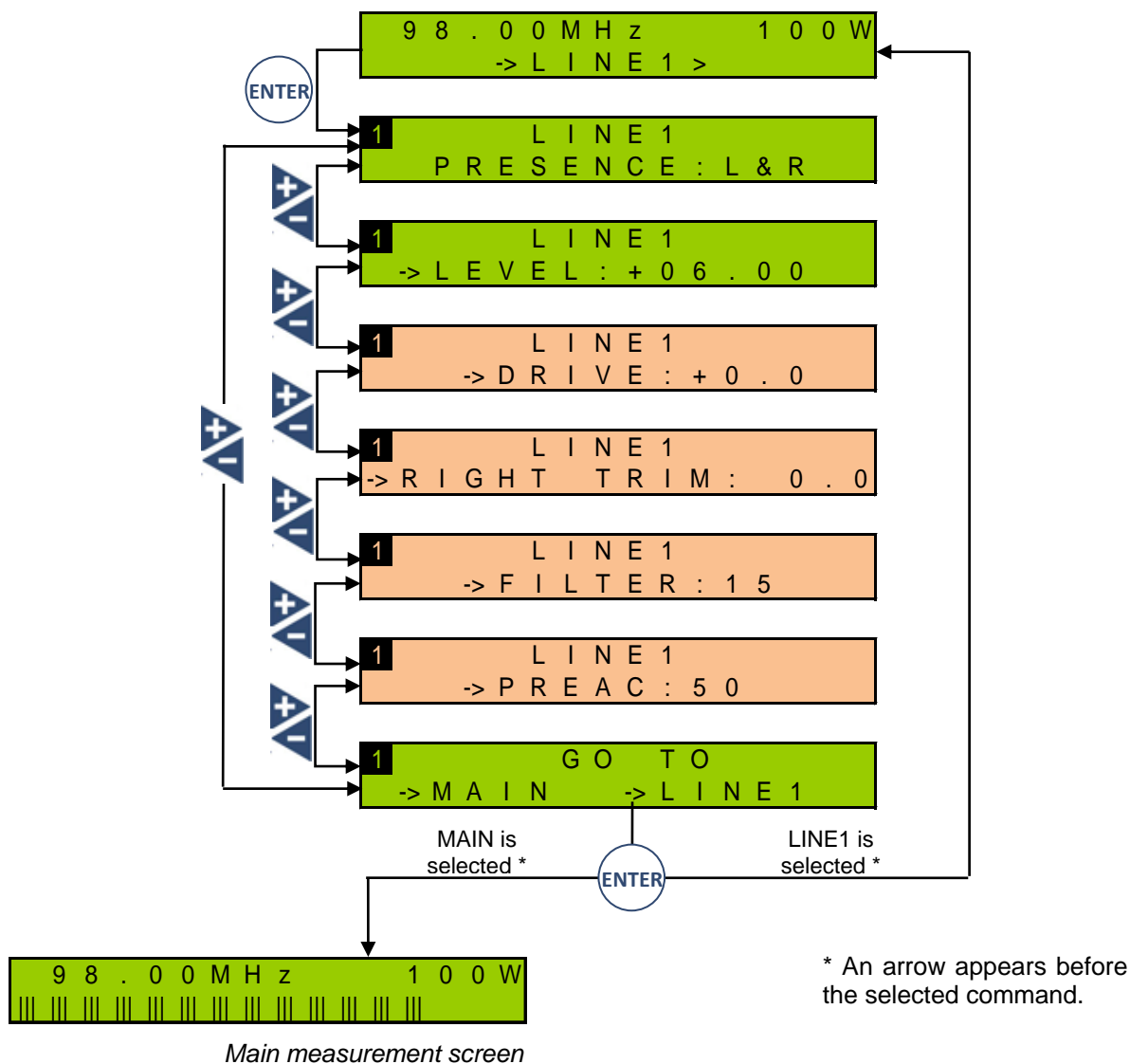
 3 dB and VSWR alarms are not included in this list because their presence is first signaled with the front panel LED indicators.

6.3.6. INPUT SWITCH Menu



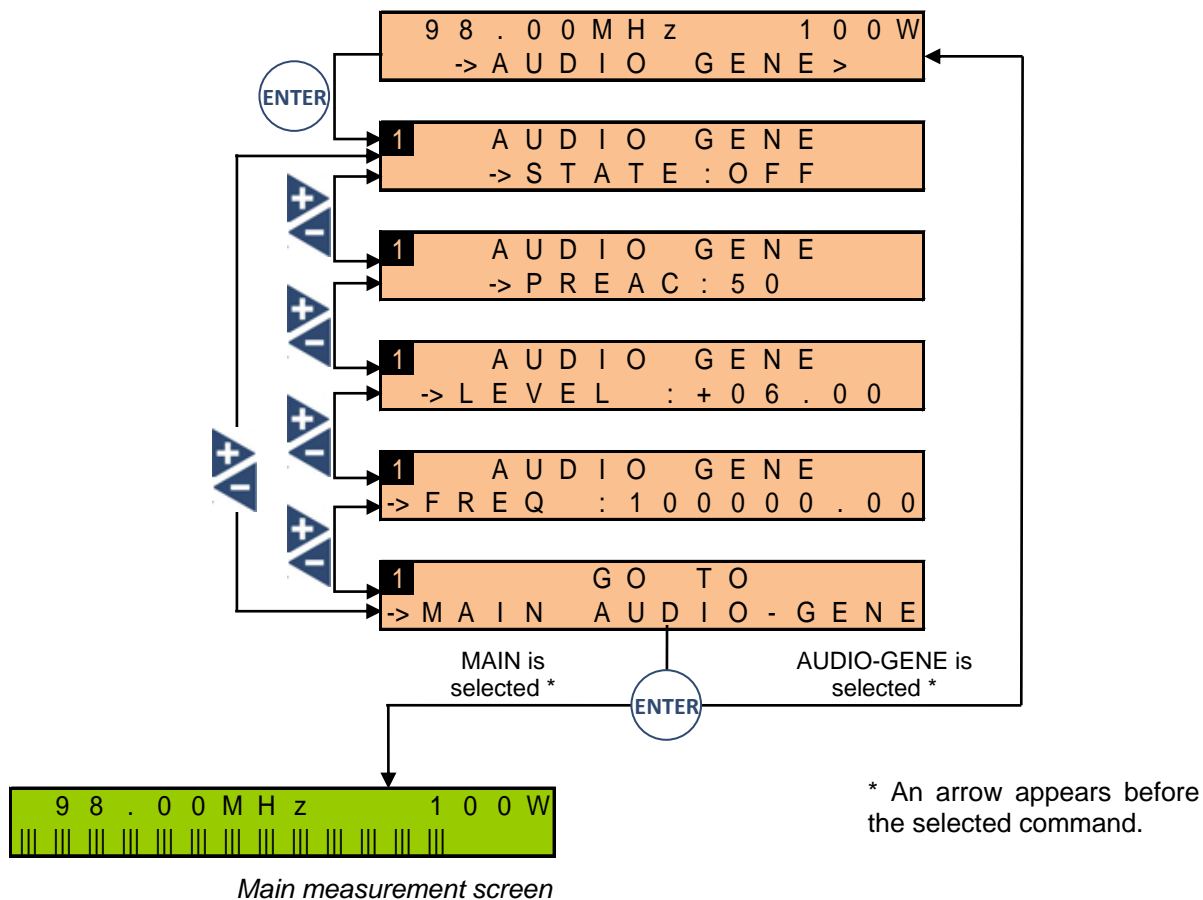
6.3.7. LINE1 Menu

(similar to the Line2 menu and to the Player menu)

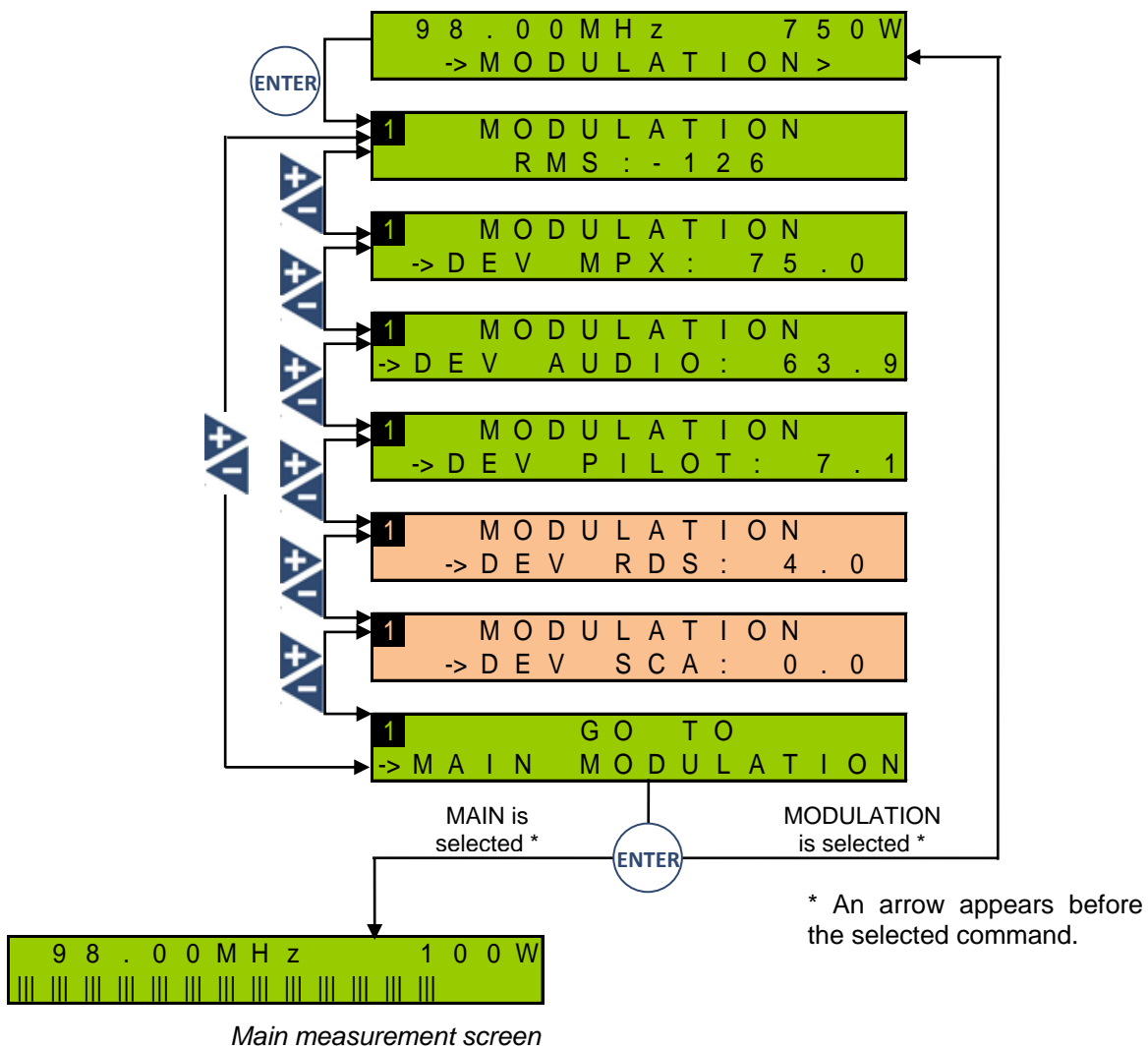


* An arrow appears before the selected command.

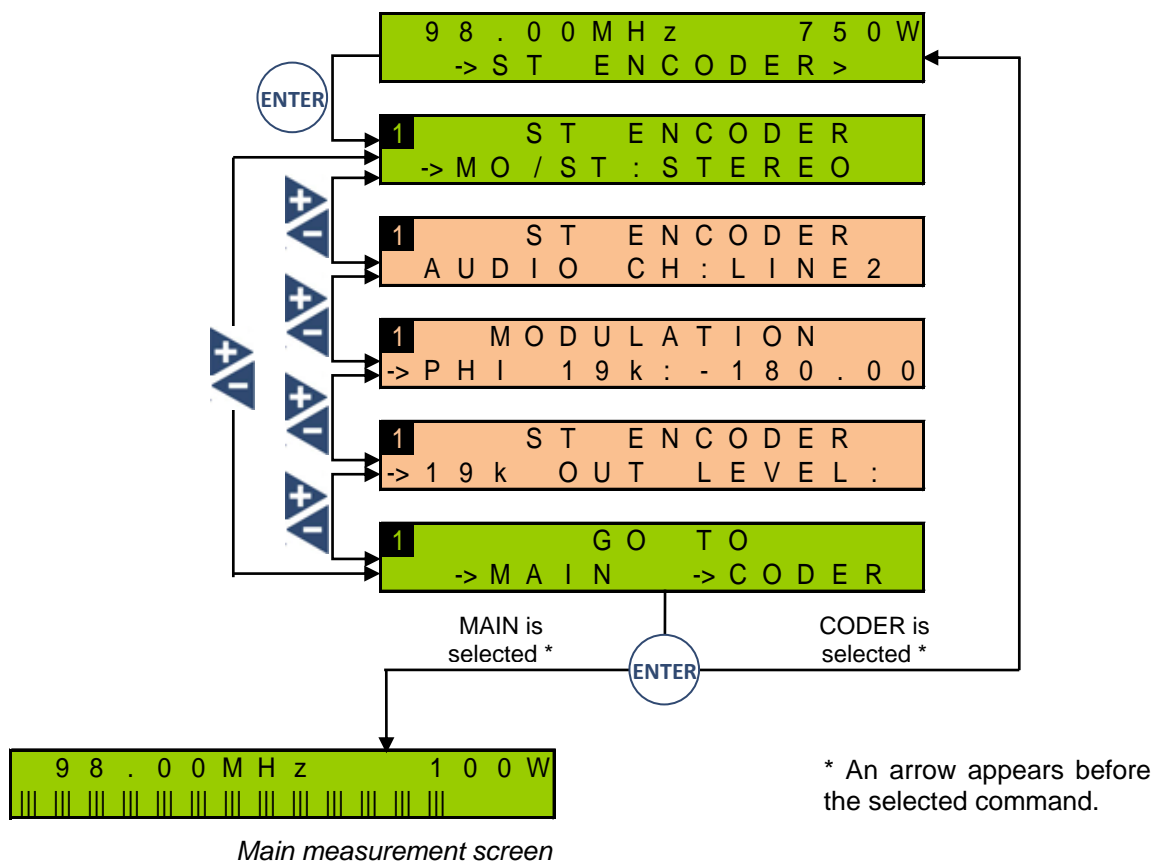
6.3.9. Audio Gene Menu



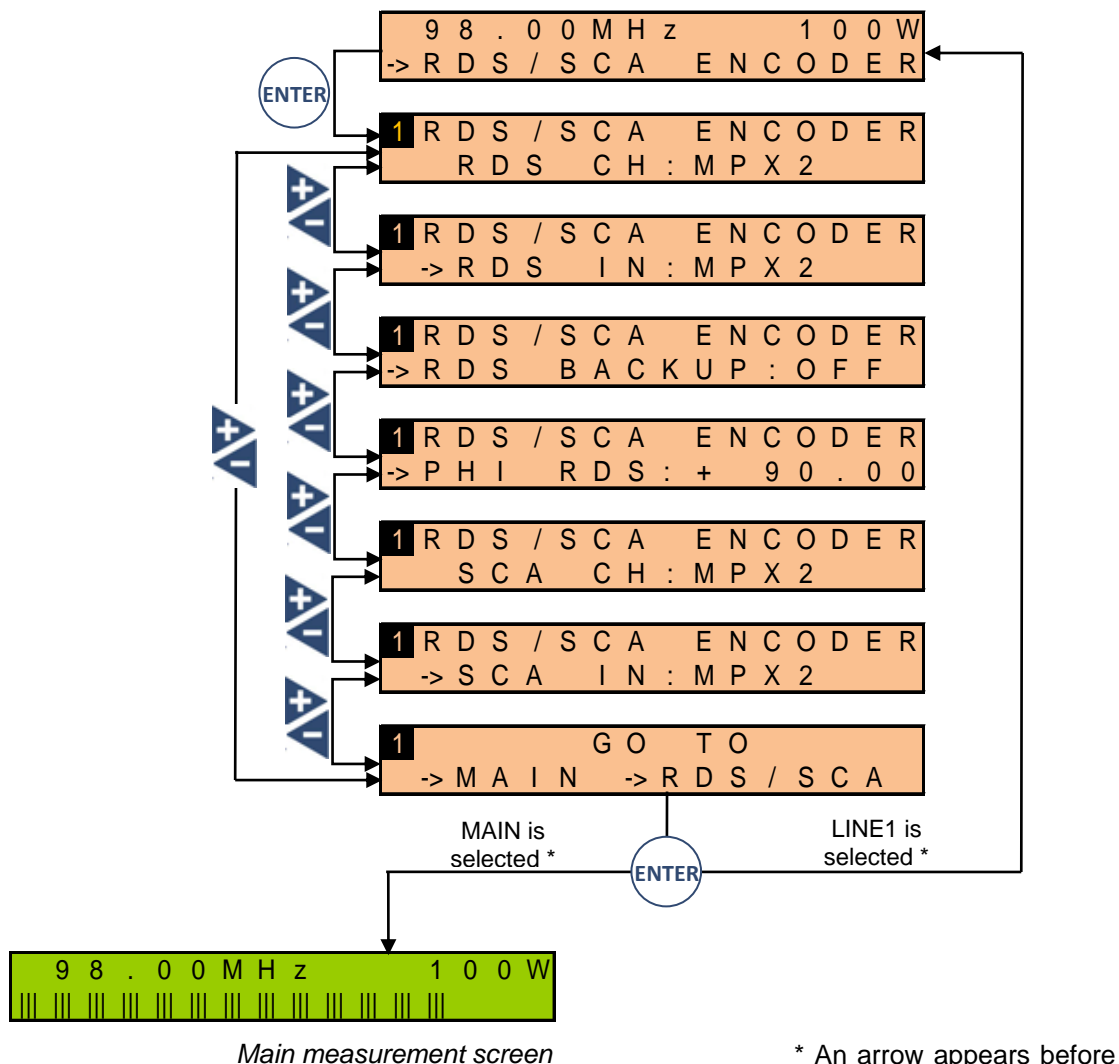
6.3.10. Modulation Menu



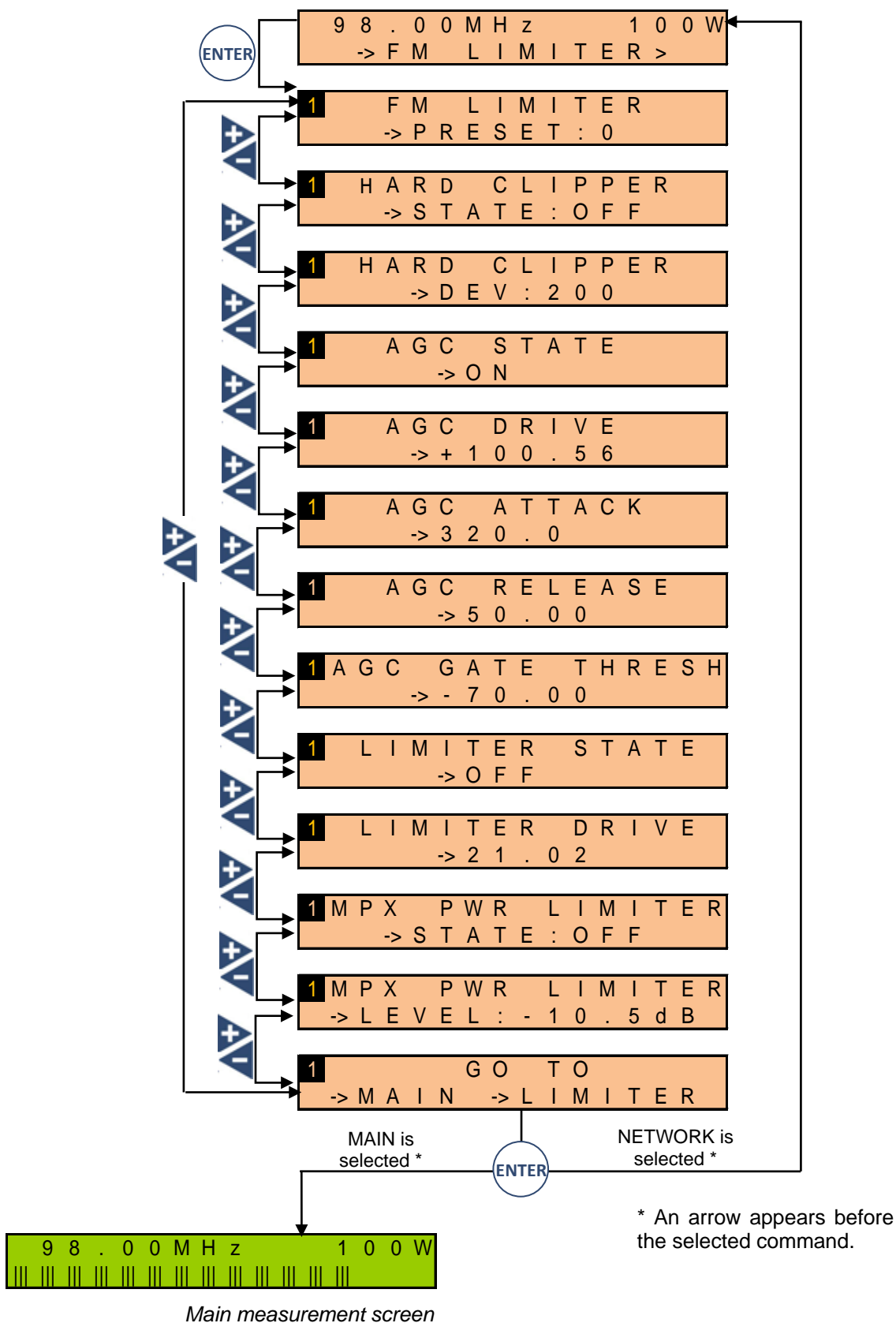
6.3.11. Stereo encoder Menu



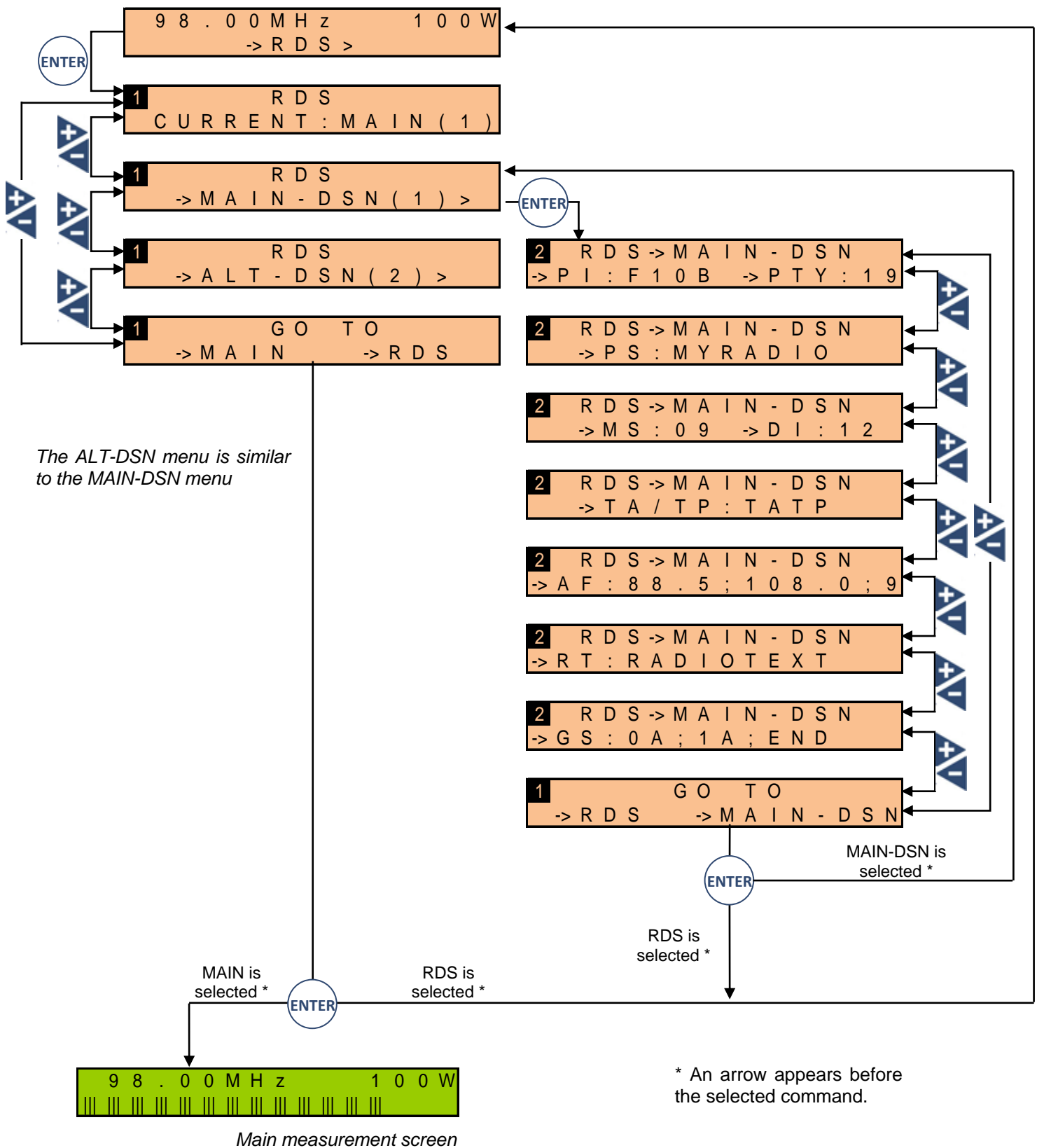
6.3.12. RDS / SCA encoder Menu



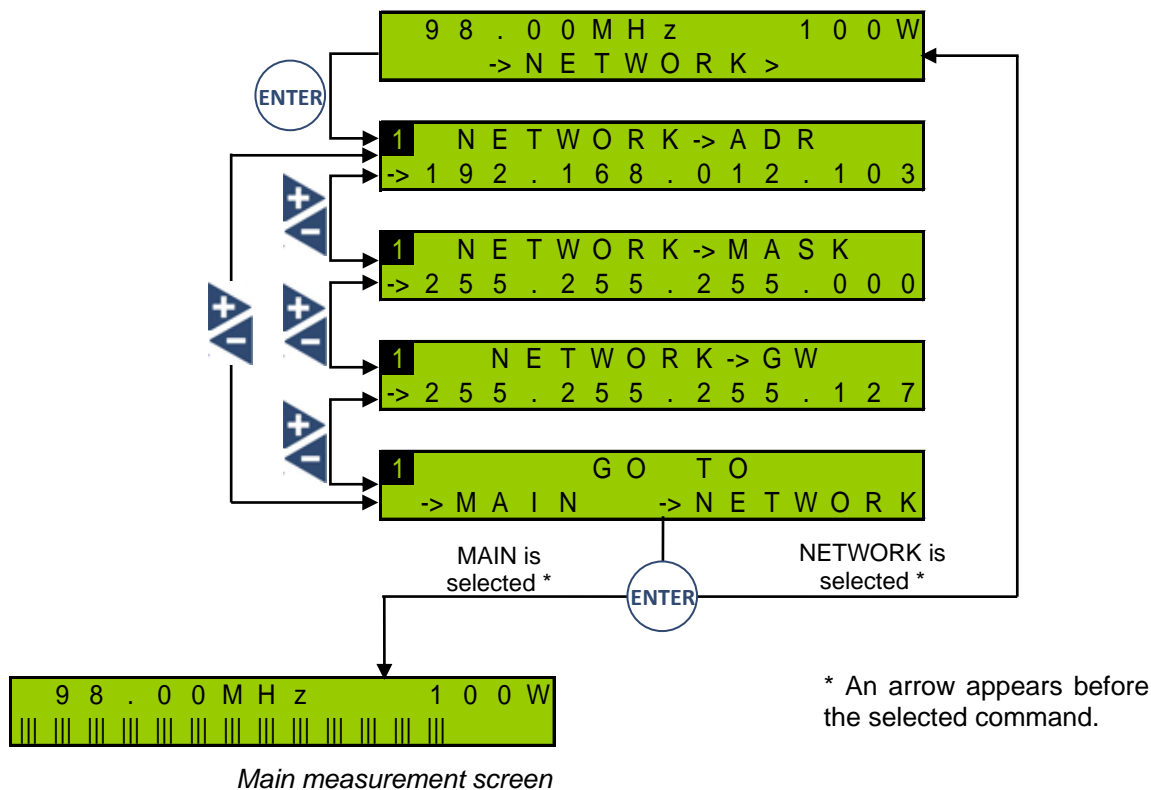
6.3.13. FM limiter Menu



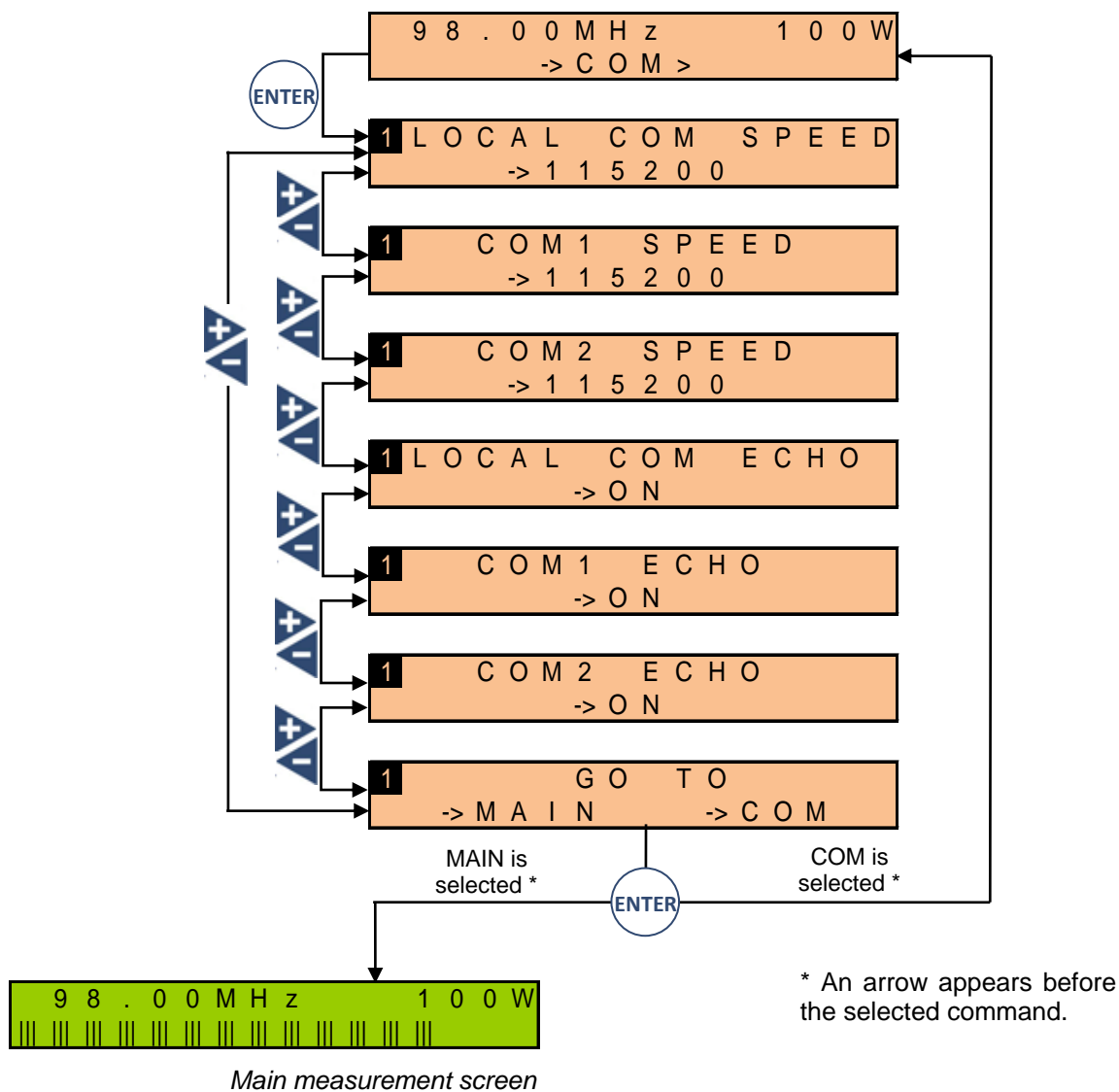
6.3.14. RDS Menu



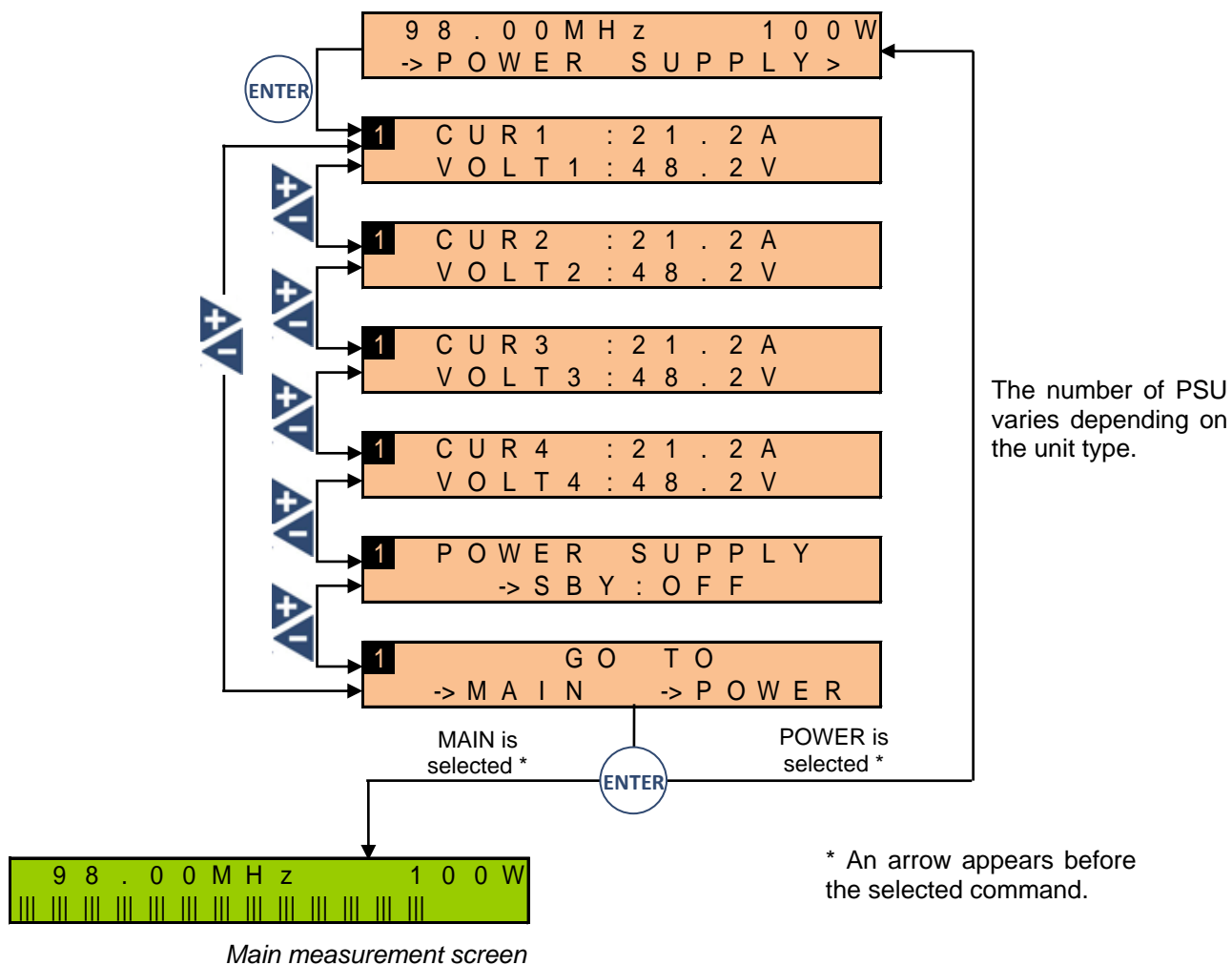
6.3.15. Network Menu



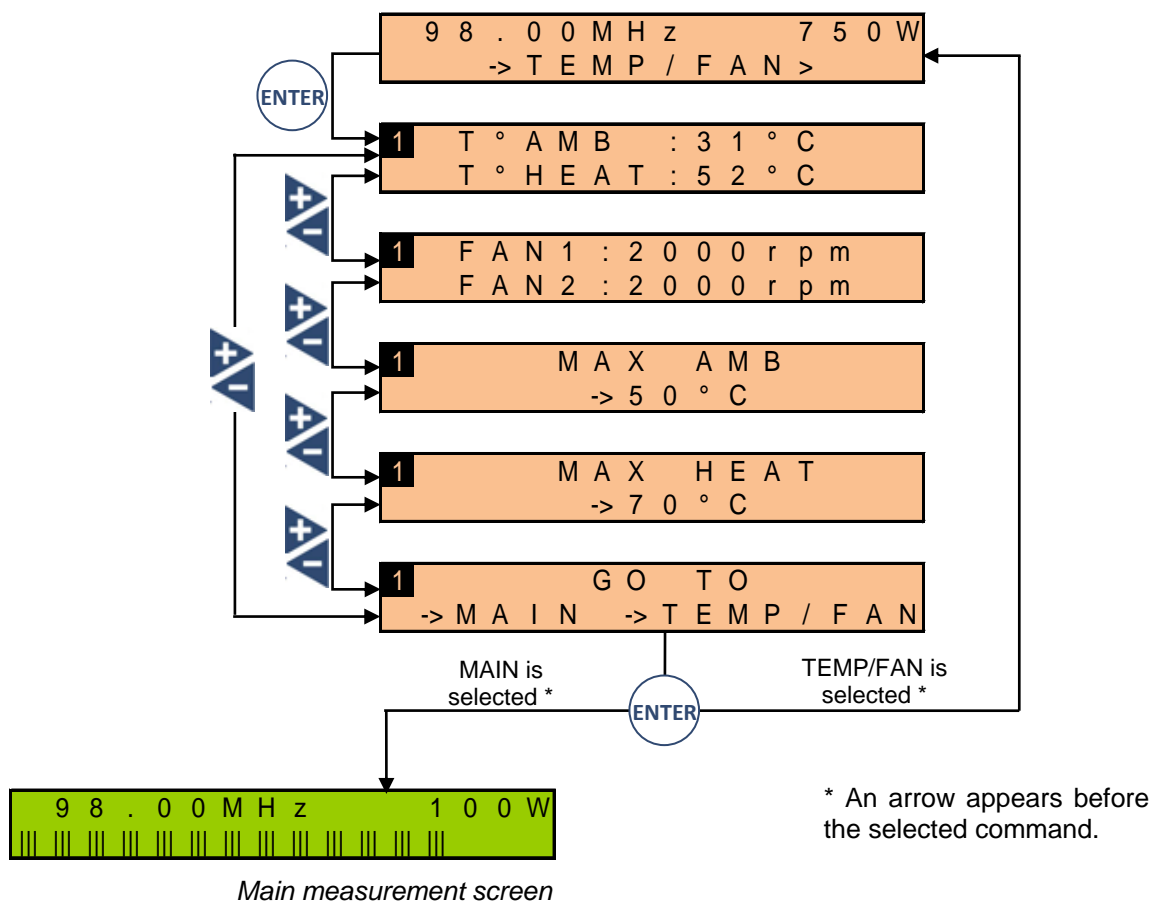
6.3.16. COM Menu



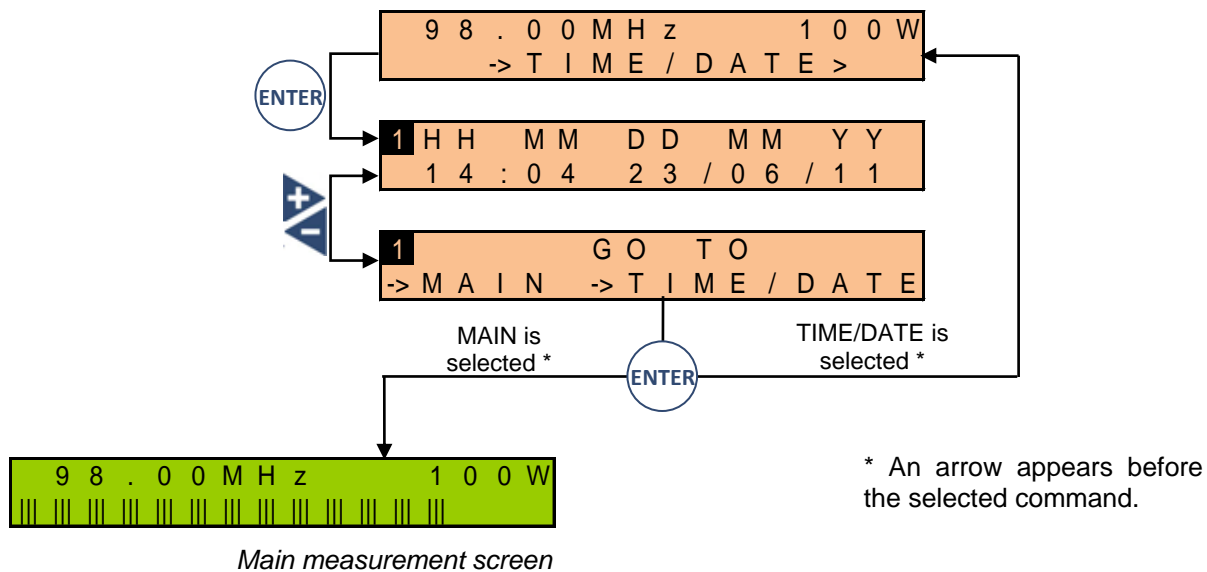
6.3.17. Power supply Menu



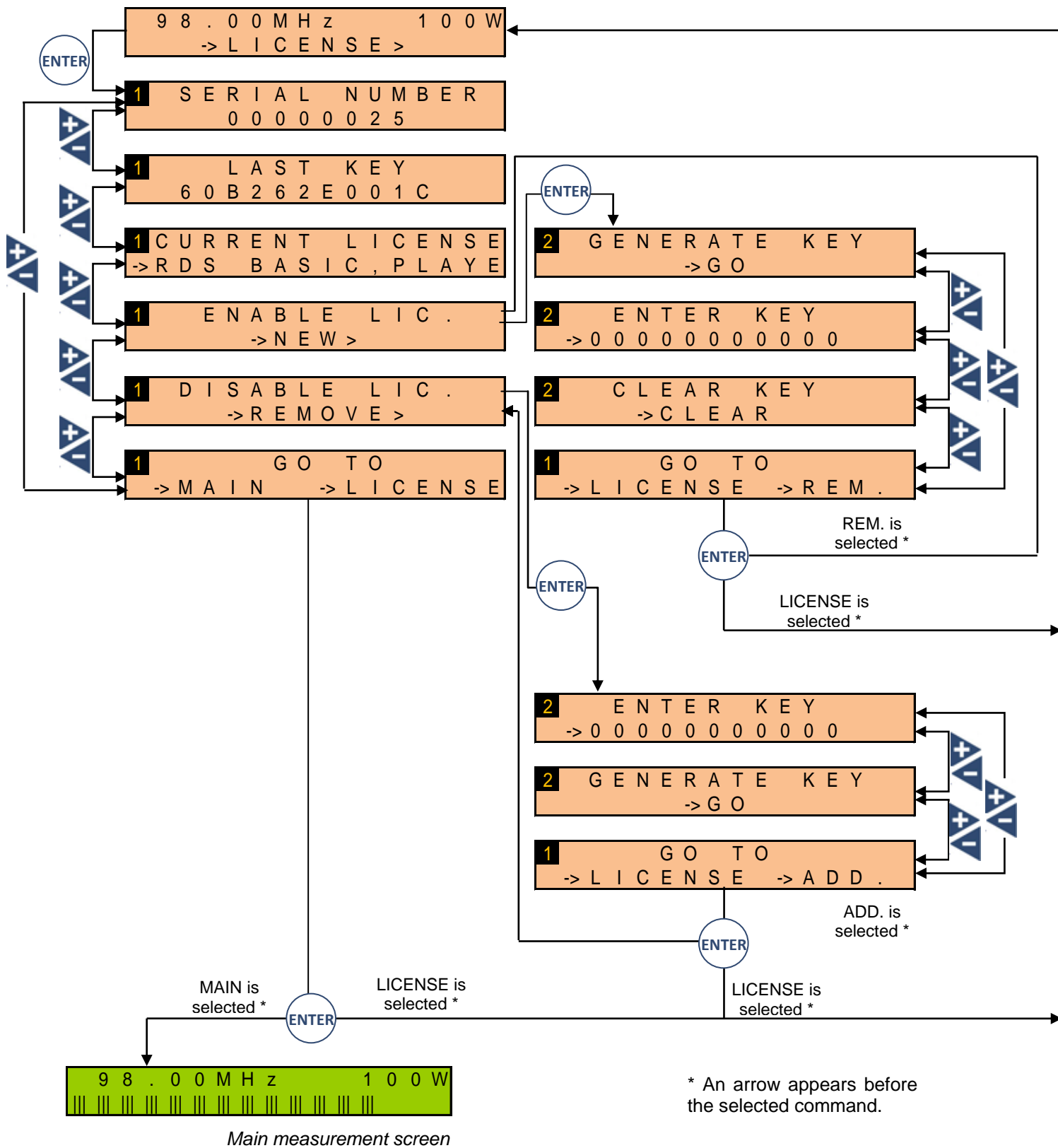
6.3.18. Temp/Fan Menu



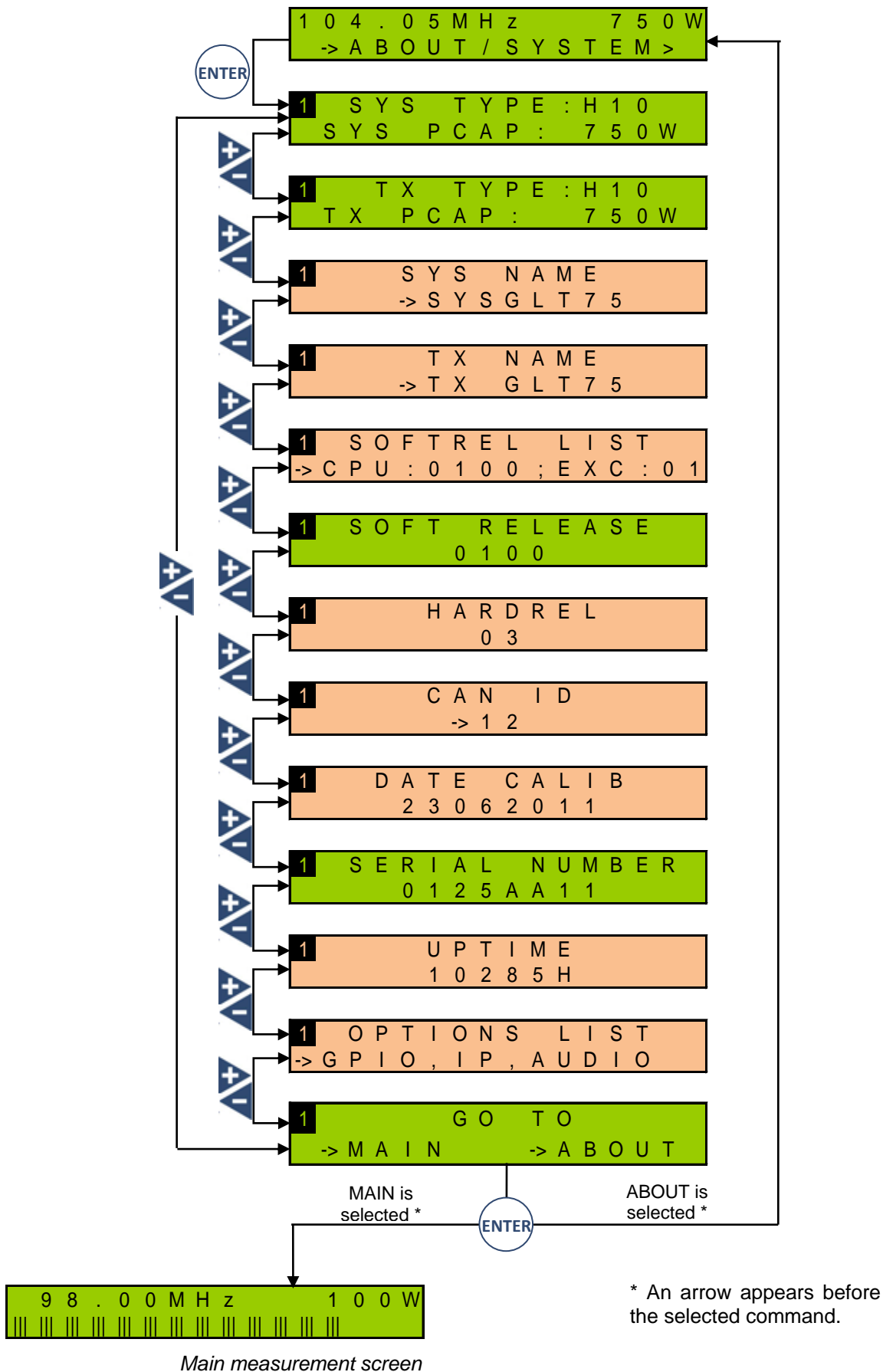
i For modules with several radiators, MAX HEAT gives the highest temperature.



6.3.20. License Menu



6.3.21. About / System Menu



6.3.22. Easy/Expert Menu

9 8 . 0 0 M H z	1 0 0 W
-> E A S Y	

6.3.23. Exit Menu

9 8 . 0 0 M H z	1 0 0 W
-> E X I T	

ENTER

9 8 . 0 0 M H z	1 0 0 W

Main measurement screen

7. SERIAL & TELNET COMMANDS

7.1. Working principle

Helios FM and Goliath FM have a serial interface. The physical connection is done using the SUB-D9 (SERIAL MONITOR) on the front panel. A common computer with an RS 232 interface (example: PC+ Windows + Hyper-Terminal) is all you need to send commands. The dialog is in text mode (ASCII) and no specific software is required.

Like all serial PC connected equipment, a good cable and correct communication settings are essential to ensure good communication. The cable must be a straight cable (not crossover), with a female plug to connect to the PC, and male plug to connect to the unit.

To avoid problems during connection, set the same communication speed and identical settings for both devices. See figure 'Port parameters'.

-> 9600	bits per second
-> 8	data bits
-> No	Parity
-> 1	Stop bit
-> No	Handshaking

Commands may also be used in Telnet when the transmitter is fitted with an IP interface.

The commands make it possible to read the functional parameters (R) or even to edit some of them (W).

To retrieve the value of a functional parameter, simply enter the command name and press the <Enter> key.

Example:

To display the status of the 3 dB alarm, type:

```
ALARM.3DB
```

The answer, ON or OFF will indicate the 3 dB alarm is on or not.

To set a parameter, type the command name, the equal sign, the new value and press the <Enter> key.

Example:

To set the transmitter working mode (local or remote), type:

```
CONF.MODE=LOCAL
```

The answer: LOCAL will indicate the command has been implemented. In case it has not, the message ERROR CMD will appear.

Protection with a password:

By default, there is no protection to send commands.

This can be secured with the command:

```
SYS.PASSWORD = my_password, where my_password is the password you chose
```

To connect without a password, enter:

```
LOGIN
```

And if a password has been set:

```
LOGIN = my_password
```


For Telnet connections, use the embedded website identifiers (see section 9.7.7), IP_user and my_IP_password in the following example:

```
LOGIN USER=IP_user
```

```
LOGIN PASSWORD= my_IP_password
```

The password set the the SYS.PASSWORD command is not used with remote connections.

To logout, use the LOGOUT command or close the terminal window. When disconnecting from a specific port (local or remote), all ports are disconnected.

 *If several users are connected at once, they all can send commands and change parameters. Le last edit will always be taken into account.*

7.2. Helios FM and Goliath FM serial commands

7.2.1. System commands

Greyed out commands are Helios FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
LOGIN	R/W	XXXX,X=[0...z] "LOGGED" ou "NOT LOGGED"	Logs the user and allows them to update variables if the password is correct. Returns Logged or not logged
LOGOUT	W		Logs out the user and locks all variables.
SYS.CID	R/W	[0..31]	Unit identifier used by the CAN bus.
SYS.CIDIP	R/W	[0..31]	Unit identifier used by the IP option CAN bus
SYS.CIDUC	R/W	[0..31]	Unit identifier used by the CAN2 bus.
SYS.COM1.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.COM1.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the rear panel serial port 1
SYS.COM2.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the rear panel serial port
SYS.COM2.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the rear panel serial port 2
SYS.DATE	R/W	DD/MM/YY	Reads and sets the amplifier date
SYS.DATECALIB	R	DDMMYYYY	Date of the last calibration
SYS.GPIO.IN.ACT	R	XX X=[A..F;0..9]	Indicates the corresponding RC when managed manually (see SYS.GPIO.IN.MASK)
SYS.GPIO.IN.MASK	R/W	XX X=[A..F;0..9]	Sets the RC control either by the control board or manually. Hexadecimal code: each bit corresponds to an input. Ex: A1 (10100001) indicates the RC 1, 6 and 8 are managed manually
SYS.GPIO.OUT.ACT	R/W	XX X=[A..F;0..9]	Enables the corresponding RM when managed manually (see SYS.GPIO.OUT.MASK)
SYS.GPIO.OUT.MASK	R/W	XX X=[A..F;0..9]	Sets the RM control either by the control board or manually. Hexadecimal code: each bit corresponds to an input: Ex: 21 (00100001) indicates RM 1 and 6 are managed manually.
SYS.HARDREL	R	xx.xx.xx x=[0..9]	Hardware version: example "3.0.1"
SYS.IP.ADR	R/W	XXX.XXX.XXX.XXX X=[0...9]	IP address of the optional IP board
SYS.IP.GW	R/W	XXX.XXX.XXX.XXX X=[0...9]	Network gateway of the optional IP board
SYS.IP.MAC	R/W	XX:XX:XX:XX:XX:XX X=[A..F;0..9]	Mac address of the optional IP board
SYS.IP.MASK	R/W	XXX.XXX.XXX.XXX X=[0...9]	IP mask of the optional IP board
SYS.KEY.ADD	R/W	ADD	Generates a key to enable the specified option
SYS.KEY.REM	R/W	REM	Generates a key to disable the specified option
SYS.LCDMENUS	R/W	"NORMAL" or "ADVANCED"	Sets the display type on the front panel screen
SYS.LOCALCOM.ECHO	R/W	"ON" or "OFF"	Adds the local echo on the front panel serial port
SYS.LOCALCOM.SPEED	R/W	9600,19200,38400,57600,115200	Speed of the front panel serial port
SYS.LOG	R		List of the latest 200 events (configuration changes, alarm start date and end date...)
SYS.LOG.CLR	W		Clears the event list
SYS.NAME	R/W	XXXX X=[A...Z]	Equipment name

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
SYS.OPT.LIST	R	RF,RC,AIP,TUN,IP,COM,REC	List of implemented options
SYS.PASSWORD	R/W	xxx x=[A..Z;0..9]	Password for the console and front panel display. 'NONE' disables the password
SYS.PASSWORD.RESET	R/W	xxx x=[A..Z;0..9]	Creates a text string to unlock the password if it has been forgotten
SYS.PAVL	R	[0..9999]	Max power, set in factory and limited depending on the type of unit. This limitation can be requested by regulating agencies.
SYS.PCAP	R	[0..999]	Nominal power of the unit: example "300"=>300 W
SYS.RAZ	W	"RAZ"	Reloads NVRAM default values
SYS.RST	W		Reset of all parameters.
SYS.RST.CPU	W	"RST"	General reset of the μ c. Sends the return code: RST
SYS.RST.EXC	W		General reset of the exciter
SYS.RST.EXCHW	W	"RST"	Material restart of the exciter card
SYS.RST.EXCSW	W	"RST"	Software restart of the exciter card
SYS.SN	R	YYMMXXX A,M,X=[0..9]	Serial number of the unit: Y => year, M => month, X => number
SYS.SOFTREL	R	xx.xx.xx x=[0..9]	Software version: example "3.0.1"
SYS.SOFTREL.LIST	R	xx.xx.xx x=[0..9]	List of the exciter software versions CPU;DSP;FPGA;IP;EXC;A/IP;TUN
SYS.TIME	R/W	HH:MM:SS	Reads and sets the amplifier time
SYS.TYPE	R	xxx x=[A..Z;0..9]	Unit type: example "G75" for Goliath FM 750 W
SYS.UNIT	R/W	"ABSOLUTE" or "PERCENT" or "RELATIVE"	Input method for audio silence detection threshold. It is used for commands INPUT.xxx.SW.THRESH; default value: RELATIVE
SYS.UPTIME	R	[0..99999999]	Indicates the number of working hours since commissioning

7.2.2. Measurement commands

Greyed out commands are Helios FM only commands.

Commands in bold are Goliath FM and Helios FM with integrated amplifier (350 W to 2000 W) only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
MEAS.12V	R	xx.x x=[0..9]	Measures the 12 V voltage
MEAS.5V	R	xx.x x=[0..9]	Measures the 5 V voltage
MEAS.AGC	R	-320.00...+320.00	Current AGC value
MEAS.AMB	R	\pm [0..125]	Measures the ambient temperature from 0 to 125°C. "52"=>52°C.
MEAS.CUR1	R	xxx.x x=[0..9]	Measures the power supply 1 current. Examples: "02.0"=>2 A "15.2"=> 15.2 A
MEAS.CUR2	R	xxx.x x=[0..9]	Measures the power supply 2 current. Examples: "02.0"=>2 A "15.2"=> 15.2 A (1500 & 2000 W modules only)
MEAS.DEV.PEAK	R	-150,0...150,0	Gives the peak value for the signal deviation in kHz

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
MEAS.DEV.PKMAX	R	-150.0...150.0	Gives the peak value for the signal deviation in kHz over 1 second
MEAS.DEV.RMS	R	-150.0...150.0	Gives the average value for the signal deviation in kHz
MEAS.FAN1.SPEED	R	xxx.x x=[0..9]	Fan 1 speed in RPM
MEAS.FAN2.SPEED	R	xxx.x x=[0..9]	Fan 2 speed in RPM (1500 & 2000 W modules only)
MEAS.HEAT1	R	±[0..125]	Measures the radiator 1 temperature (for modules 350 W and greater only)
MEAS.HEAT2	R	±[0..125]	Measures the radiator 2 temperature (1500 & 2000 W modules only)
MEAS.MPXPOWER.10S	R	-320.00...+320.00	Value of the MPX power over 10 seconds
MEAS.MPXPOWER.1M	R	-320.00...+320.00	Value of the MPX power over 1 minute
MEAS.MPXPOWER.ATT	R	-320.00...+320.00	Value of the attenuation applied to limit the MPX power
MEAS.N12V	R	-xx.x x=[0..9]	Measures the -12 V voltage
MEAS.PFWD	R	[0..9999]	Measure of direct power. examples: "20" or "300" => 300 W
MEAS.PFWD1	R	[0..9999]	Measure of direct power of pallet 1. examples: "20" or "300" => 300 W
MEAS.PFWD2	R	[0..9999]	Measure of direct power of pallet 2. examples: "20" or "300" => 300 W (1500 & 2000 W modules only)
MEAS.PIN	R	[0..99.9]	Measures the input power
MEAS.PREF	R	xxx.x x=[0..9]	Measure of reflected power: "20" => 2 W
MEAS.PSU_TEMP	R	±[0..125]	Measures the temperature of the PSU
MEAS.VOLT1	R	xxx.x x=[0..9]	Measures the power supply 1 voltage. Example: "48.0" =>48.0 V
MEAS.VOLT2	R	xxx.x x=[0..9]	Measures the power supply 2 voltage. Example: "48.0" =>48.0 V (1500 & 2000 W modules only)
MEAS.VSWR	R	XX.X X=[0..9]	VSWR measure "01.0" or "20.0"
MEAS.VSWRTRIP		[0..99]	Gives the number of reflected power safety in the past hour

7.2.3. Transmitter commands

These commands are global commands; they apply to the whole transmitter. To configure specific modules, use CONF commands (see next section).

Commands available both as TX and CONF are followed by a star (*).

For Helios FM transmitters with no external amplifier who are not controlled by a Nephtys central unit, use TX commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
TX.1DB *	R/W	[0..9999]	Sets the triggering threshold for the 1 dB alarm. Example "250" => 250 W
TX.3DB *	R/W	[0..9999]	Sets the triggering threshold for the 3 dB alarm. Example "250" => 250 W
TX.3DB.AUTO *	R/W	"ON" or "OFF"	If ON set the 3 dB level to TX.PWR/2. If TX.3DB is modified, switches automatically to OFF
TX.ALARM.1DB	R	"ON" or "OFF"	ON => 1 dB alarm, OFF => No alarm.
TX.ALARM.3DB	R	"ON" or "OFF"	ON => 3 dB alarm, OFF => No alarm.
TX.ALARM.VSWR	R	"ON" or "OFF"	ON => VSWR alarm, OFF => No alarm
TX.ALARM.VSWRTRIP	R	"ON" or "OFF"	Indicates if there has been a VSWR trip fault (max number of RF shut off/restart cycles has been reached)
TX.FAULT	R	"FAULT" or "OK"	Fault state of transmitter
TX.FREQ *	R/W	XXXXXX	Working frequency of the modulator in kHz "232553" => 232.553 MHz
TX.INTERLOCK	R	"CLOSE" or "OPEN"	State of the safety loop
TX.LINK	R	"OPEN" or "CLOSE"	State of the CAN bus link
TX.MODE *	R	"LOCAL" or "REMOTE"	Single transmitter, indicates the local or remote mode
TX.NAME	R/W	XXXX X=[A..Z]	Transmitter name
TX.OPMODE	R/W	"ON" or "OFF"	Enables/disables the RF on a single transmitter
TX.PAVL	R	[0..9999]	Max power, set in factory and limited depending on the type of unit. This limitation can be requested by regulating agencies.
TX.PCAP	R	[0..999]	Amplifier nominal power: example "300"=>300W
TX.PFWD	R	[0..9999]	Measure of direct power. examples: "20" or "300" => 300W
TX.PREF	R	xxx.x x=[0..9]	Measure of reflected power: "20" => 2W
TX.PWR *	R/W	[0..9999]	Sets the output power. From "0" .. "9999"
TX.PWR_MAX *	R/W	[0..99999]	Set the max power of the transmitter TX.PWR. Limited by TX.PAVL
TX.RFPRESENT	R	"PRES" or "NOT PRES"	Indicates if the single transmitter output power is present
TX.RFPRESENT.MIN *	R/W	[0..9999]	TX.RFPRESENT (presence RF) triggering threshold; default value: 0
TX.SBY *	R/W	"ON" or "OFF"	Enables/disables the standby mode
TX.TYPE	R	xxx x=[A..Z;0..9]	System type: example "1000-NT" For a 1000 W transmitter with Nephtys central unit
TX.VSWR	R	XX.X X=[0..9]	VSWR measure "01.0" or "20.0"
TX.VSWR.MAX *	R/W	XX.X X=[0..9]	Sets the triggering threshold for the VSWR alarm. Must be of type "XXX". "020" => VSWR = 2. Do not use "2" or "1.4".
TX.VSWRTRIP *	R/W	"ON" or "OFF"	Enables/disables reflected power safety using a RF shut off/restart method
TX.VSWRTRIP_COUNT	R	0..4	VSWR trip fault counter
TX.WARNING	R	"ON" or "OFF"	Single transmitter. Warning state of single transmitter

7.2.4. Configuration commands

This commands are specific to an individual unit.

When a command is available both as TX and as CONF (followed by a star (*) below), it should be used only in local maintenance.

Greyed out commands are Helios FM only commands.

Commands in bold are Goliath FM and Helios FM with integrated amplifier (350 W to 2000 W) only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CONF.10M.OPE	R/W	"AUTO" or "MANU"	Indicates the operating mode of the external 10 MHz input
CONF.1DB *	R/W	[0..999]	Set the 1 dB alarm threshold. Example "250" => 250 W
CONF.3DB *	R/W	[0..999]	Set the 3 dB alarm threshold. Example "250" => 250 W
CONF.3DB.AUTO *	R/W	"ON" or "OFF"	If ON set the 3 dB level to TX.PWR/2. If TX.3DB is modified, automatically switches to OFF
CONF.AGC.ATT	R/W	[0...32000]	Attack in dB/s
CONF.AGC.DRIVE	R/W	[-320,00...320.00]	Drive applied before the AGC
CONF.AGC.REL	R/W	[0...50,00]	Release in dB/s
CONF.AGC.STATE	R/W	"ON" or "OFF"	Enables/disables the AGC function on Line1, Line2 and Player
CONF.AGC.THR	R/W	[-70,00...0]	Sets the non-triggering threshold in dB
CONF.AMB.MAX	R/W	[0..999]	Sets the triggering threshold for the ambient temperature alarm
CONF.CROSSFADE	R/W	0 to 25.5	Crossfade between channels (in seconds)
CONF.DEV.AUDIO	R/W	0...150	Sets the audio excursion
CONF.DEV.CLIP	R/W	0 to 200	Set the excursion clipping in kHz ; +128 = disabled limitation
CONF.DEV.LIMIT	R/W	0 to 200	Set the MPX excursion limitation; +128 = disabled limitation
CONF.DEV.MPX	R/W	00000 à 150.00	Sets the MPX excursion
CONF.DEV.MPXPWR	R/W	-12.7...12.7	Set the MPX power limitation; +128 = disabled limitation
CONF.DEV.PILOT	R/W	0 to 25.5	Sets the pilot excursion
CONF.DEV.RDS	R/W	0 to 25.5	Sets the RDS excursion
CONF.DEV.SCA	R/W	0 to 25.5	Sets the SCA excursion
CONF.DRIVE.LIMIT	R/W	0 to 25.5	Drive value of the FM limiter in dB
CONF.FREQ *	R/W	"ON" or "OFF"	Gives the exciter's working frequency in kHz
CONF.FSK.ID	R/W	[0..9][A...Z][a...z][-]	Code to transmit in Morse, default value: empty string
CONF.FSK.REP	R/W	0...255	Number of repetitions of CONF.FSK.ID, default value: 0
CONF.FSK.SHIFT	R/W	[-25...-5][5...25]	Jump in frequency (in kHz), default value: 50
CONF.FSK.SPEED	R/W	0...25	Speed in group number (5 characters base), default value: 5
CONF.HEAT.MAX	R/W	[0..125]	Sets the triggering threshold for the radiator 1 temperature alarm (for modules 350 W and greater only)
CONF.MODE *	R	"LOCAL" or "REMOTE"	Indicates the mode, local or remote
CONF.PHASE.PILOT	R/W	-180..+180	Sets the pilot phase

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CONF.PHASE.RDS	R/W	-180..+180	Sets the RDS phase
CONF.PROBE.PFWD	W	[0...9]	Adjusts the forward power of the RF probe
CONF.PROBE.PREF	W	[0...9]	Adjusts the reflected power of the RF probe
CONF.PSU_TEMP.MAX	R/W	[0..999]	Set the triggering threshold of the PSU temperature alarm
CONF.PWR *	R/W	[0..999]	Set the Power. from "0" .. "9999"
CONF.PWR_MAX *	R/W	[0..99999]	Set the max power of the transmitter CONF.PWR. Limited by SYS.PAVL
CONF.RF	R/W	"ON" or "OFF"	ON => Enable RF OFF => Disables RF
CONF.RFPRESENT.MIN *	R/W	[0..999]	STAT.RF (presence RF) triggering threshold; default value: 0
CONF.SBY *	R/W	"ON" or "OFF"	Enables the standby mode. Read only for Helios FM
CONF.STATE.CLIP	R/W	"ON" or "OFF"	Enables/disables the Hard Clipper
CONF.STATE.LIMIT	R/W	"ON" or "OFF"	Enables/disables the FM limiter
CONF.STATE.MPXWPR	R/W	"ON" or "OFF"	Enables/disables the MPX Power limiter
CONF.VOLT	R/W	XX.X X=[0..9] or "STOP"	Sets the voltage for all power supplies; Stops control. Send STOP to start again.
CONF.VOLT1	R/W	XX.X X=[0..9] or "STOP"	Sets the voltage for power supply 1; Stops control. Send STOP to start again.
CONF.VOLT2	R/W	XX.X X=[0..9] or "STOP"	Sets the voltage for power supply 2; Stops control. Send STOP to start again. (1500 & 2000 W modules only)
CONF.VSWR.MAX *	R/W	XX.X X=[0..9]	Set the VSWR alarm threshold. Use a 3 digit value. "020" => VSWR = 2. You cannot sent "2" or "1.4".
CONF.VSWR_TRIG	R/W	"WARNING" or "FAULT/WARN" or "FAULT"	Working mode in case of VSWR overshoot. WARNING = triggers a simple Warning. WARN/FAULT = triggers a fault but does not trigger the reflected protection. FAULT = triggers a fault and the reflected protection triggers a VSWR fault. Default value: FAULT
CONF.VSWRTRIP *	R/W	"ON" or "OFF"	Enables/disables reflected power safety

7.2.5. Alarm commands

Greyed out commands are Helios FM only commands.

Commands in bold are Goliath FM and Helios FM with integrated amplifier (350 W to 2000 W) only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
ALARM.10MSWITCH	R	"ON" or "OFF"	Indicates there was a 10 MHz switch
ALARM.1DB	R	"ON" or "OFF"	ON => 1 dB Alarm, OFF => No alarm
ALARM.3DB	R	"ON" or "OFF"	ON => 3 dB Alarm, OFF => No alarm
ALARM.AMB	R	"ON" or "OFF"	ON => ambient alarm, OFF => No alarm.
ALARM.BATLOW	R	"ON" or "OFF"	Indicates if the NVRAM battery's level is OK
ALARM.CUR1	R	"ON" or "OFF"	Indicates the PSU 1 current is over the max threshold.
ALARM.CUR2	R	"ON" or "OFF"	Indicates the PSU 2 current is over the max threshold. (1500 & 2000 W modules only)
ALARM.FAN1	R	"ON" or "OFF"	Fan 1 alarm; speed is too slow
ALARM.FAN2	R	"ON" or "OFF"	Fan 2 alarm; speed is too slow

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
ALARM.FAULT	R	"ON" or "OFF"	ON => critical alarm OFF => No alarm (3 dB, VSWR)
ALARM.HEAT1	R	"ON" or "OFF"	ON => radiator temp alarm, OFF => No alarm.
ALARM.INPUTSWITCH	R	"ON" or "OFF"	Indicates if the current audio input corresponds to the highest priority channel
ALARM.LINE1	R	"ON" or "OFF"	ON => no signal on the input LINE1
ALARM.LINE2	R	"ON" or "OFF"	ON => no signal on the input LINE2
ALARM.LIST	R		Returns the list of current alarms in ASCII format
ALARM.MPX1	R	"ON" or "OFF"	ON => no signal on the input MPX1
ALARM.MPX2	R	"ON" or "OFF"	ON => no signal on the input MPX2
ALARM.OVDR	R	"ON" or "OFF"	Indicates whether the input power is too high (ON) or not (OFF)
ALARM.PIN	R	"ON" or "OFF"	Indicates that the input power is too low
ALARM.PLAYER	R	"ON" or "OFF"	ON => no signal on the generator
ALARM.PLL	R	"ON" or "OFF"	Indicates whether the PLL is locked (OFF) or unlocked (ON)
ALARM.PSU_TEMP	R	"ON" or "OFF"	ON => PSU alarm on, OFF=> no alarm
ALARM.RDSSWITCH	R	"ON" or "OFF"	Indicates there was a RDS switch (auto mode only)
ALARM.SUPPLY1	R	"ON" or "OFF"	PSU 1 state
ALARM.SUPPLY2	R	"ON" or "OFF"	PSU 2 state (1500 & 2000 W modules only)
ALARM.TEMP1	R	"ON" or "OFF"	ON => temp alarm (thermocoupler) OFF => No alarm
ALARM.TEMP2	R	"ON" or "OFF"	ON => temp alarm (thermocoupler) OFF => No alarm (1500 & 2000 W modules only)
ALARM.VOLT.AUX	R	"ON" or "OFF"	Indicates if auxiliary voltage is offset by more than 10% of the set value
ALARM.VOLT1	R	"ON" or "OFF"	ON => PSU 1 voltage is offset by more than 10% of the expected value
ALARM.VOLT2	R	"ON" or "OFF"	ON => PSU 2 voltage is offset by more than 10% of the expected value (1500 & 2000 W modules only)
ALARM.VSWR	R	"ON" or "OFF"	ON => VSWR Alarm, OFF => No VSWR alarm
ALARM.VSWRTRIP	R	"ON" or "OFF"	Indicates if there has been a VSWR trip fault
ALARM.WARN	R	"ON" or "OFF"	ON => Internal Alarm (warnings) OFF=> No alarm. (fan, current, voltage, power supply, temperature, radiator, ambient temp)

7.2.6. Input commands

These commands are Helios FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.AUDIOGEN.FREQ	R/W	0 ~ 100000.00	delta phase = freq audio / 200000
INPUT.AUDIOGEN.LEVEL	R/W	-100.00 ~ 12.00	Audio level
INPUT.AUDIOGEN.PREAC	R/W	"0" or "50" or "75"	Sets the value of the pre-emphasis
INPUT.AUDIOGEN.STATE	R/W	"OFF" or "L" or "R" or "L+R" or "L-R"	Type of generated MPX signal
INPUT.LINE1.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.LINE1.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.LINE1.FLT	R/W	"0" or "15" or "16" or "17"	Configuration of the audio filter

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.LINE1.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds
INPUT.LINE1.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second.
INPUT.LINE1.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.LINE1.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.LINE1.ALARM.
INPUT.LINE1.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.LINE1.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio signals are present on input 1
INPUT.LINE1.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds
INPUT.LINE1.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second.
INPUT.LINE1.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the channel with the highest configurable priority.
INPUT.LINE1.SW.DELAY	R/W	XXX=[1...120]	Switching delay when loss of audio 1
INPUT.LINE1.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.LINE1.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 1
INPUT.LINE1.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on channel 1
INPUT.LINE1.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
INPUT.LINE1.TYPE	R	"ANA" or "AES" "OFF"	Indicates the type of audio signals present on input 1
INPUT.LINE2.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.LINE2.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.LINE2.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.LINE2.LEFT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds
INPUT.LINE2.LEFT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second.
INPUT.LINE2.LEVEL	R/W	-20.00...18.00	Internal numerical gain. For AES, between -20 and 0; for ANA between -18 and +18
INPUT.LINE2.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.LINE2.ALARM.
INPUT.LINE2.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.LINE2.PRESENCE	R	"NONE" or "L" or "R" or "L&R"	Indicates audio signals are present on input 2
INPUT.LINE2.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds
INPUT.LINE2.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second
INPUT.LINE2.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the channel with the highest configurable priority.
INPUT.LINE2.SW.DELAY	R/W	XXX=[1...120]	Switching delay when loss of audio 2
INPUT.LINE2.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.LINE2.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 2
INPUT.LINE2.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on channel 2
INPUT.LINE2.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)
INPUT.LINE2.TYPE	R	"ANA" or "AES" "OFF"	Indicates the type of audio signals present on input 2

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.MPX.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the channel with the highest configurable priority.
INPUT.MPX.SW.DELAY	R/W	XXX=[1...120]	Switching delay when loss on the MPX input
INPUT.MPX.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on MPX 1
INPUT.MPX1.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.MPX1.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.MPX1.LEVEL	R/W	-18.00...+18.00	Internal numerical gain
INPUT.MPX1.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.MPX1.ALARM.
INPUT.MPX1.PEAK	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 100 milliseconds
INPUT.MPX1.PKMAX	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 1 second
INPUT.MPX1.PRESENCE	R	MO" or "MO+R" or "MO+R+S" or "ST" or "ST+R" or "ST+R+S"	Gives the composition of MPX1 on channel 3. R = RDS ; MO = Mono ; ST = Stereo ; S = SCA
INPUT.MPX1.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (4= highest priority)
INPUT.MPX1.TYPE	R/W	"MO" or "ST" or "ST+R+S" or "ST+R" or "RDS" or "RDS+SCA" or "SCA"	Sets the type of signal on the MPX1 input and applies the corresponding filter
INPUT.MPX2.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the input
INPUT.MPX2.DRIVE	R/W	-6.00...6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.MPX2.LEVEL	R/W	-18.00...+18.00	Internal numerical gain
INPUT.MPX2.LOST	R	"YES" or "NO"	Detection of silence on the input after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.MPX2.ALARM.
INPUT.MPX2.PEAK	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 100 milliseconds
INPUT.MPX2.PKMAX	R	-150...150	Gives the deviation max peak value of the transmitted signal in kHz over 1 second
INPUT.MPX2.PRESENCE	R	MO" or "MO+R" or "MO+R+S" or "ST" or "ST+R" or "ST+R+S"	Gives the composition of MPX2 on channel 3. R = RDS ; MO = Mono ; ST = Stereo ; S = SCA
INPUT.MPX2.SW.PRIO	R/W	0..7 ; 0=disabled	Priority of each audio channel (4= highest priority)
INPUT.MPX2.TYPE	R/W	"MO" or "ST" or "ST+R+S" or "ST+R" or "RDS" or "RDS+SCA" or "SCA"	Sets the type of signal on the MPX1 input and applies the corresponding filter
INPUT.PLAYER.ALARM	R/W	"NONE" or "FAULT" or "WARNING"	Alarm generated upon loss of signal on the generator
INPUT.PLAYER.DRIVE	R/W	-6.00 to 6.00	Drive setting, allows an increase of the input audio level without changing the deviation setting.
INPUT.PLAYER.FLT	R/W	0;1;2 0=15;1=16;2=17	Configuration of the audio filter
INPUT.PLAYER.LEFT.PEAK	R	-100 ... 28	Gives the left audio input max peak value over 100 milliseconds
INPUT.PLAYER.LEFT.PKMAX	R	-100 ... 28	Gives the left audio input max peak value over 1 second.
INPUT.PLAYER.LEVEL	R/W	-20...0	Internal numerical gain
INPUT.PLAYER.LOST	R	"YES" or "NO"	Detection of silence on the generator after timeout. If 'Yes', an alarm may be sent depending on the setting for INPUT.PLAYER.ALARM.
INPUT.PLAYER.PREAC	R/W	0;50;75	Sets the value of the pre-emphasis
INPUT.PLAYER.PRESENCE	R	OFF or "L" or "R" or "L&R"	Indicates audio signals are present on the player
INPUT.PLAYER.RIGHT.PEAK	R	-100 ... 28	Gives the right audio input max peak value over 100 milliseconds
INPUT.PLAYER.RIGHT.PKMAX	R	-100 ... 28	Gives the right audio input max peak value over 1 second.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
INPUT.PLAYER.SAMPLING	R/W	"44" or "48" or "96"	Sampling frequency of the internal player audio signal
INPUT.PLAYER.SW.BACKDELAY	R/W	XXX=[0...30]	Back delay on the channel with the highest configurable priority.
INPUT.PLAYER.SW.DELAY	R/W	XXX=[1...120]	Switching delay when loss of audio 1
INPUT.PLAYER.SW.PRIO	R/W	0..4 ; 0=disabled	Priority of each audio channel (7= highest priority)
INPUT.PLAYER.SW.SILENCE	R/W	"L" or "R" or "ANY" or "BOTH"	Sets on which channel (L,R or L+R) silence detection must be conducted for the audio input 1
INPUT.PLAYER.SW.THRESH	R/W	-90...000	Silence triggering level in dBFS on channel 1
INPUT.PLAYER.TRIM	R/W	-3.00 to 3.00	Sets the offset between left and right channels (+3 = left channel level is 3 dBu higher than right channel level)

7.2.7. Encoder commands

These commands are Helios FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CODER.19KOUT.LEVEL	R/W	0...8; 0=OFF	Enables/disables and sets the rear panel 19 kHz level output
CODER.CURRENT.AUDIO	R	"AUTO" or "LINE1" or "LINE2" or "TUNER" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "PLAYER" or "GENE"	Indicates the channel used by the exciter.
CODER.CURRENT.RDS	R	"NONE" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "INTERNAL"	Indicates the channel used by the exciter.
CODER.CURRENT.SCA	R	"NONE" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "INTERNAL"	Indicates the channel used by the exciter.
CODER.MOST	R/W	"STEREO" or "MONO" or "MONO_L" or "MONO_R"	Configuration of the audio on MPX STEREO; MONO; MONO_L
CODER.RDS.BACKUP	R/W	"AUTO" or "MANU"	RDS is automatically or manually added on loss of RDS in MPX
CODER.SELECT.AUDIO	R/W	"AUTO" or "LINE1" or "LINE2" or "TUNER" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "PLAYER" or "GENE"	Imposes a specific input.
CODER.SELECT.RDS	R/W	"OFF" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2" or "INTERNAL"	Channel to use, 'OFF' disables the RDS
CODER.SELECT.SCA	R/W	"OFF" or "MPX1" or "MPX2" or "TUNER1" or "TUNER2"	Channel to use, 'OFF' disables the SCA

7.2.8. RDS commands

These commands are Helios FM only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
PS_TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the PS text. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.ALTDSN.AF	R/W	XX,...,XX XX=[87.5 ~108.00]	List of alternative frequencies (26 max). Enter frequencies as 5 character values. Ex: 89.70 or 103.2
RDS.ALTDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.ALTDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)
RDS.ALTDSN.ID	R/W	X; X=[1...8]	Indicates which DSN sent by UECP is copied to the ALT memory
RDS.ALTDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.ALTDSN.PI	R/W	XXXX X=[0..9;A...F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.ALTDSN.PS	R/W	XXXX X=[0..9;A...Z]	Station name; with 8 characters
RDS.ALTDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.ALTDSN.PTYN	R/W	XXXX X=[0..9;A...Z]	Program type name
RDS.ALTDSN.RT	R/W	X..X ; X=[0..9;A...Z]	radiotext
RDS.ALTDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.APPOINTMENT.STR	R/W	[A...Z]	Sets the command that modifies <APPOINTMENT>; default value: APPOINTEMENT
RDS.CHAT.CENTER.STR	R/W	[A...Z]	Sets the command that modifies <CHAT.CENTER>; default value: CHATCENTRE
RDS.CHAT.STR	R/W	[A...Z]	Sets the command that modifies <CHAT>; default value: CHAT
RDS.CT.EN	R/W	"ON" or "OFF"	Enables/disables the Clock time function
RDS.CT.OFFSET	R/W	-24---24	Time offset in number of 30 minute periods. Ex: for an offset of 90 minutes, set 3
RDS.DSN	R/W	"MAIN" or "ALT"	transmit the DSN 1 or 2 to the exciter
RDS.EMAIL.HOTLINE.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.HOTLINE>; default value: EMAILHOTLINE
RDS.EMAIL.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.OTHER>; default value: EMAILOTHER
RDS.EMAIL.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <EMAIL.STUDIO>; default value: EMAILSTUDIO
RDS.GET_DATA.STR	R/W	[A...Z]	Sets the command that modifies <GET_DATA>; default value: GETDATA
RDS.IDENTIFIER.STR	R/W	[A...Z]	Sets the command that modifies <IDENTIFIER>; default value: IDENTIFIER
RDS.INFO.ADVERTISEMENT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.ADVERTISEMENT>; default value: ADVERTISEMENT
RDS.INFO.ALARM.STR	R/W	[A...Z]	Sets the command that modifies <INFO.ALARM>; default value: ALARMINFO
RDS.INFO.CINEMA.STR	R/W	[A...Z]	Sets the command that modifies <INFO.CINEMA>; default value: CINEMA
RDS.INFO.DAILY_DIVERSION.STR	R/W	[A...Z]	Sets the command that modifies <INFO.DAILY_DIVERSION>; default value: DAILYDIVERSION

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.INFO.DATE_TIME.STR	R/W	[A...Z]	Sets the command that modifies <INFO.DATE_TIME>; default value: DATETIME
RDS.INFO.EVENT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.EVENT>; default value: EVENT
RDS.INFO.HEALTH.STR	R/W	[A...Z]	Sets the command that modifies <INFO.HEALTH>; default value: HEALTH
RDS.INFO.HOROSCOPE.STR	R/W	[A...Z]	Sets the command that modifies <INFO.HOROSCOPE>; default value: HOROSCOPE
RDS.INFO.LOTTERY.STR	R/W	[A...Z]	Sets the command that modifies <INFO.LOTTERY>; default value: LOTTERY
RDS.INFO.NEWS.LOCAL.STR	R/W	[A...Z]	Sets the command that modifies <INFO.NEWS.LOCAL>; default value: LOCALNEWS
RDS.INFO.NEWS.STR	R/W	[A...Z]	Sets the command that modifies <INFO.NEWS>; default value: NEWS
RDS.INFO.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <INFO.OTHER>; default value: OTHER
RDS.INFO.SCENE.STR	R/W	[A...Z]	Sets the command that modifies <INFO.SZENE>; default value: SCENE
RDS.INFO.SPORT.STR	R/W	[A...Z]	Sets the command that modifies <INFO.SPORT>; default value: SPORT
RDS.INFO.STOCKMARKET.STR	R/W	[A...Z]	Sets the command that modifies <INFO.STOCKMARKET>; default value: STOCKMARKET
RDS.INFO.TRAFFIC.STR	R/W	[A...Z]	Sets the command that modifies <INFO.TRAFFIC>; default value: TRAFFIC
RDS.INFO.TV.STR	R/W	[A...Z]	Sets the command that modifies <INFO.TV>; default value: TVINFO
RDS.INFO.URL.STR	R/W	[A...Z]	Sets the command that modifies <INFO.URL>; default value: URLINFO
RDS.INFO.WEATHER.STR	R/W	[A...Z]	Sets the command that modifies <INFO.WEATHER>; ; default value: WEATHER
RDS.ITEM.ALBUM.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.ALBUM>; default value: ALBUMNAME
RDS.ITEM.ARTIST.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.ARTIST>; default value: ARTISTNAME
RDS.ITEM.BAND.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.BAND>; default value: BAND
RDS.ITEM.COMMENT.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMMENT>; default value: COMMENT
RDS.ITEM.COMPOSER.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMPOSER>; default value: COMPOSER
RDS.ITEM.COMPOSITION.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.COMPOSITION>; default value: COMPOSITION
RDS.ITEM.CONDUCTOR.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.CONDUCTOR>; default value: CONDUCTOR
RDS.ITEM.DURATION.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.DURATION>; default value: DURATION
RDS.ITEM.GENRE.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.GENRE>; default value: GENRE
RDS.ITEM.MOVEMENT.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.MOVEMENT>; default value: MOVEMENT
RDS.ITEM.TITLE.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.TITLE>; default value: SONGTITLE
RDS.ITEM.TRACKNUMBER.STR	R/W	[A...Z]	Sets the command that modifies <ITEM.TRACKNUMBER>; default value: TRACKNUMBER
RDS.MAINDSN.AF	R/W	XX,...,XX XX=[87.5~108.0]	List of alternative frequencies (26 max). Enter frequencies as 5 character values. Ex: 89.70 or 103.2
RDS.MAINDSN.DI	R/W	0~15	Numerical function that drives an RDS receiver's audio stage to adjust audio decoding depending on the type of audio channel (mono, stereo, ...)
RDS.MAINDSN.GS	R/W	XX;;XX XX=service	Group sequence: 0A => 0, 2A=>4, 10A=>20 (32 max)

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.MAINDSN.ID	R/W	X; X=[1...8]	Indicates which DSN sent by UECP is copied to the MAIN memory
RDS.MAINDSN.MS	R/W	"0" or "1"	Numerical flag that automatically modifies the sound level of an RDS receiver depending on the broadcast program (1 = music, 0 = speech)
RDS.MAINDSN.PI	R/W	XXXX X=[0..9;A...F]	Enables RDS to identify the station when searching the frequency using AF or EON-AF code
RDS.MAINDSN.PS	R/W	XXXX X=[0..9;A...Z]	Station name; with 8 characters
RDS.MAINDSN.PTY	R/W	0~31	Program type as set by the RDS standard
RDS.MAINDSN.PTYN	R/W	XXXX X=[0..9;A...Z]	Program type name
RDS.MAINDSN.RT	R/W	X..X ; X=[0..9;A...Z]	radiotext
RDS.MAINDSN.TATP	R/W	"OFF" or "TA" or "TP" or "TATP"	Enables/disables TA and TP services
RDS.MMS.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <MMS.OTHER>; default value: MMSOTHER
RDS.PHONE.HOTLINE.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.HOTLINE>; default value: PHONEHOTLINE
RDS.PHONE.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.OTHER>; default value: PHONEOTHER
RDS.PHONE.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <PHONE.STUDIO>; default value: PHONESTUDIO
RDS.PLACE.STR	R/W	[A...Z]	Sets the command that modifies <PLACE>; default value: PLACE
RDS.PROGRAM.EDITORIAL_STAFF.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.EDITORIAL_STAFF>; default value: EDITORIALSTAFF
RDS.PROGRAM.HOMEPAGE.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.HOMEPAGE>; default value: HOMEPAGE
RDS.PROGRAM.HOST.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.HOST>; default value: PROGRAMMEHOST
RDS.PROGRAM.NEXT.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.NEXT>; default value: PROGRAMMENEXT
RDS.PROGRAM.NOW.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.NOW>; default value: PROGRAMMENOW
RDS.PROGRAM.PART.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.PART>; default value: PROGRAMMEPART
RDS.PROGRAM.SUBCHANNEL.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAM.SUBCHANNEL>; default value: SUBCHANNEL
RDS.PROGRAMME.FREQUENCY.STR	R/W	[A...Z]	Sets the command that modifies <PROGRAMME.FREQUENCY>; default value: FREQUENCY
RDS.PS1.CENTER	R/W	ON/OFF	Centered text
RDS.PS1.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS1.EN	R/W	ON/OFF	Enables/disables string1
RDS.PS1.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS1.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite
RDS.PS1.TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the 1 st PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS1.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PS2.CENTER	R/W	ON/OFF	Centered text
RDS.PS2.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS2.EN	R/W	ON/OFF	Enables/disables string2
RDS.PS2.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS2.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
RDS.PS2.TEXT	R/W	ascii [0x21...0x7E]	Dynamically sets the 2 nd PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS2.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PS3.CENTER	R/W	ON/OFF	Centered text
RDS.PS3.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS3.EN	R/W	ON/OFF	Enables/disables string3
RDS.PS3.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS3.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite
RDS.PS3.TEXT	R/W	[0x21...0x7E]	Dynamically sets the 3 rd PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS3.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PS4.CENTER	R/W	ON/OFF	Centered text
RDS.PS4.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS4.EN	R/W	ON/OFF	Enables/disables string4
RDS.PS4.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS4.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite
RDS.PS4.TEXT	R/W	[0x21...0x7E]	Dynamically sets the 4 th PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS4.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PS5.CENTER	R/W	ON/OFF	Centered text
RDS.PS5.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS5.EN	R/W	ON/OFF	Enables/disables string5
RDS.PS5.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS5.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite
RDS.PS5.TEXT	R/W	[0x21...0x7E]	Dynamically sets the 5 th PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS5.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PS6.CENTER	R/W	ON/OFF	Centered text
RDS.PS6.DELAY	R/W	0...99	Delay between 2 consecutive screens
RDS.PS6.EN	R/W	ON/OFF	Enables/disables string6
RDS.PS6.INCREMENT	R/W	[0...8]	Increment type of the frame. 0 = Word
RDS.PS6.REP	R/W	0,,,16	Sets the number of repetition of string1. 0=infinite
RDS.PS6.TEXT	R/W	[0x21...0x7E]	Dynamically sets the 6 th PS scroll line. Text with Tags <ITEM.TITLE>, <ITEM.ARTIST>, ...
RDS.PS6.TRUNCATE	R/W	ON/OFF	Truncated text
RDS.PURCHASE.STR	R/W	[A...Z]	Sets the command that modifies <PURCHASE>; default value: PURCHASE
RDS.SMS.OTHER.STR	R/W	[A...Z]	Sets the command that modifies <SMS.OTHER>; default value: SMSOTHER
RDS.SMS.STUDIO.STR	R/W	[A...Z]	Sets the command that modifies <SMS.STUDIO>; default value: SMSSTUDIO
RDS.STATIONNAME.LONG.STR	R/W	[A...Z]	Sets the command that modifies <STATIONNAME.LONG>; default value: STATIONNAMELONG
RDS.STATIONNAME.SHORT.STR	R/W	[A...Z]	Sets the command that modifies <STATIONNAME.SHORT>; default value: STATIONNAMESHORT
RDS.VOTE.CENTER.STR	R/W	[A...Z]	Sets the command that modifies <VOTE.CENTER>; default value: VOTECENTRE
RDS.VOTE.QUESTION.STR	R/W	[A...Z]	Sets the command that modifies <VOTE.QUESTION>; default value: VOTEQUESTION

7.2.9. Status commands

Commands in bold are Goliath FM and Helios FM with integrated amplifier (350 W to 2000 W) only commands.

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
STAT.10M	R	"PRES" or "NOT PRES"	Indicates the presence of an external 10 MHz
STAT.1PPS	R	"LOCK" or "UNLOCK"	Indicates the presence of an external 1 PPS
STAT.CLK	R	"INTERNAL" or "EXTERNAL"	Indicates the 10 MHz switch position
STAT.CURRENT.IN	R	"1+OPT" or "1+2" or "2+OPT"	Indicates the channels used for channels 1 and 2
STAT.DCOK1	R	"ON" or "OFF"	Indicates if the PSU 1 of the amplifier is "ON" or "OFF"
STAT.DCOK2	R	"ON" or "OFF"	Indicates if the PSU 2 of the amplifier is "ON" or "OFF" (1500 & 2000 W modules only)
STAT.INTERLOCK	R	"CLOSE" or "OPEN"	State of the safety loop
STAT.LINK	R	"OPEN" or "CLOSE"	State of the CAN bus link
STAT.PLL	R	"LOCK" or "UNLOCK"	Indicates the state of the exciter PLL
STAT.PREFMAX	R	"ON" or "OFF"	ON: Max Reflected Power Safety overshoot
STAT.RF	R	"PRES" or "NOT PRES"	RF present at the output of the unit
STAT.SECPIN	R	"ON" or "OFF"	Indicates if the input power is greater than the hardware threshold
STAT.SECPREF	R	"ON" or "OFF"	Indicates if the reflective protection safety is enabled
STAT.SECTEMP1	R	"ON" or "OFF"	State of the temperature safety of pallet 1
STAT.SECTEMP2	R	"ON" or "OFF"	State of the temperature safety of pallet 2 (1500 & 2000 W modules only)
STAT.SWRF	R	"ON" or "OFF"	State of the RF switch

7.2.10. Communication board commands

NAME	Access (R/W)	Possible value on the serial port of the unit	Comments
CAN	R/W	ID,CMD,DATA ; ID=[0...9]; CMD=[0...FF] DATA=[0..9 ; A...Z]"	Gateway between the serial port and the CAN bus. ID=recipient's address; TABLE=table containing the command; CMD=command number; DATA=parameter value. The list of tables/commands is available on request.
CAN.SCAN	R/W		Returns the list of units present of the CAN bus.

Commands related to options are only available when the option is present.

7.3. HyperTerminal connection

With Windows 95/98/2000/XP/Vista/7, launch the HyperTerminal:

Start > Programs > Accessories > Communication > HyperTerminal.

The following window appears:

Connection description

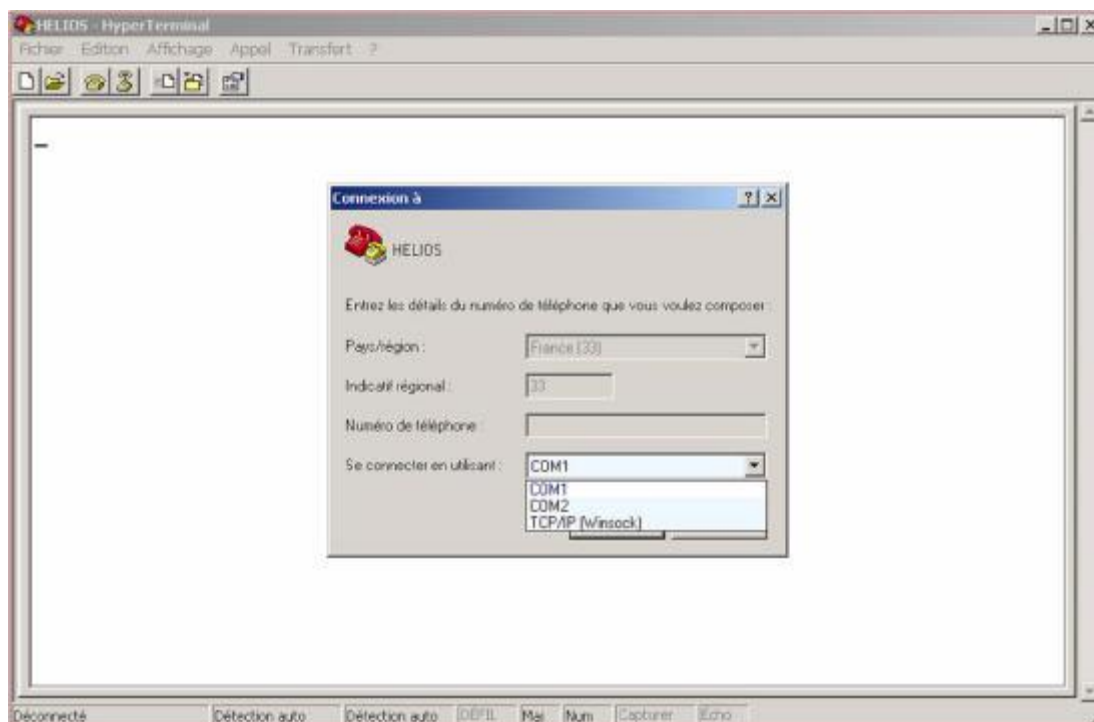


Enter the connection name and click OK.

It is recommended to enter the device name you want to contact.

The next window appears:

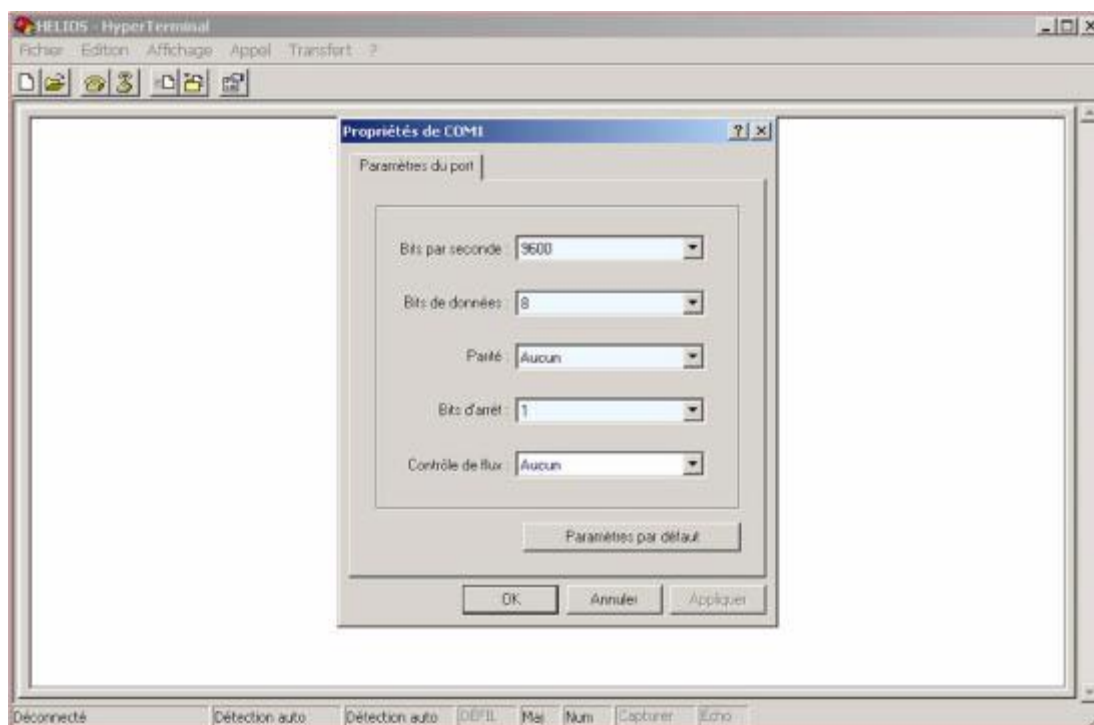
Connection



Select the serial port with which you want to connect to the equipment, then click OK.

Enter the port parameters as indicated, and click OK.

Port settings



Your connection has been established, you can directly communicate with the device connected to the serial port of your computer.

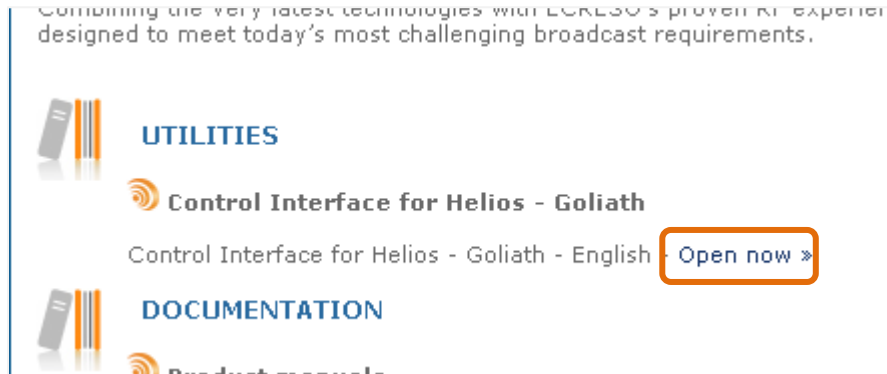
You can launch the commands described in this chapter. Typing the INFO command, the device must display the following information (connected to a Goliath FM in this example).

8. CONFIGURATION WITH THE PC APPLICATION

8.1. Overview

The Ecreso CD includes the Engi application which enables the transmitter's configuration with a simple serial connection to a PC.

On the transmitter's page, click the control interface link to download the zipped file to your PC.



Extract the .exe file. You do not need to install it, simply double-click on ENGI_REV_xxx.exe to launch the application.

Connect the Helios FM front or rear panel serial port to a RS-232 port on the PC using a straight cable with a female connector for the PC and a male connector for the transmitter, or with the IP optional board is present on the Helios FM, connect both the transmitter and the PC to the network.

8.2. Using the application

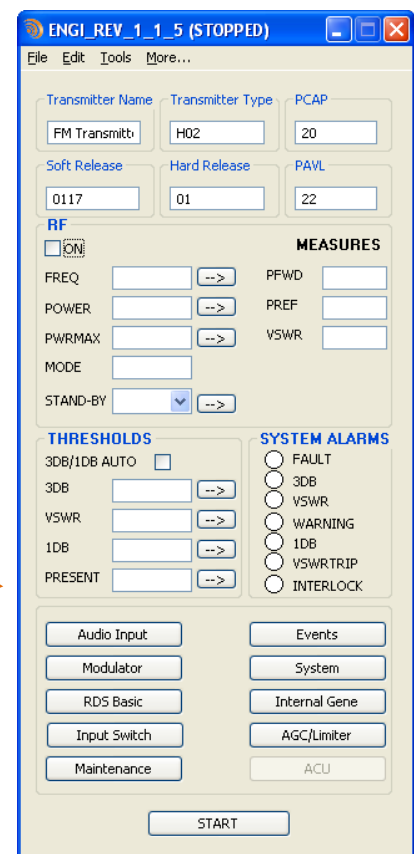
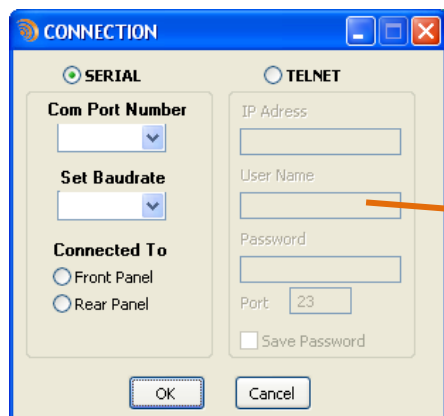
8.2.1. Connection

After launching the application, the connection window pops up.

For a serial connection, select the PC COM port and set the rate at 9600 bauds, and indicate which port is used.

If the transmitter is fitted with an IP interface, you can connect remotely: select TELNET and enter the unit IP address, user name and password as you would to access the embedded web site (see section 9.7.7).

Click the "OK" button.



When connected, the unit information is automatically updated.

Transmitter Name	Transmitter Type	PCAP
FM Transmitt	H02	20
Soft Release	Hard Release	PAVL
0117	01	22

With a serial connection, if the module is password protected, you will need to enter the password before you can access all the functions.




A small dialog box titled "PASSWORD" with a text input field containing "*****" and an "OK" button.

8.2.2. Configuration

Once connected, click the “Start” button to retrieve RF values and thresholds on the main page.

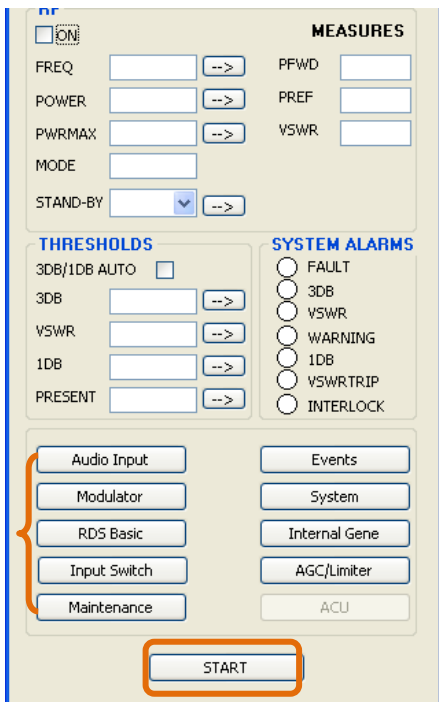
These values are described section 5.2.

Values that can be set are followed by the button . Click this button after having updated a value to send it to the transmitter.

A set of buttons give access to other parameters. Click on one of them to open a window displaying associated parameters.

As long as the application is in “Start” mode, current values are retrieved for all open windows.

Clicking “Stop” prevents retrieval of data; however, sending data to the module remains possible.

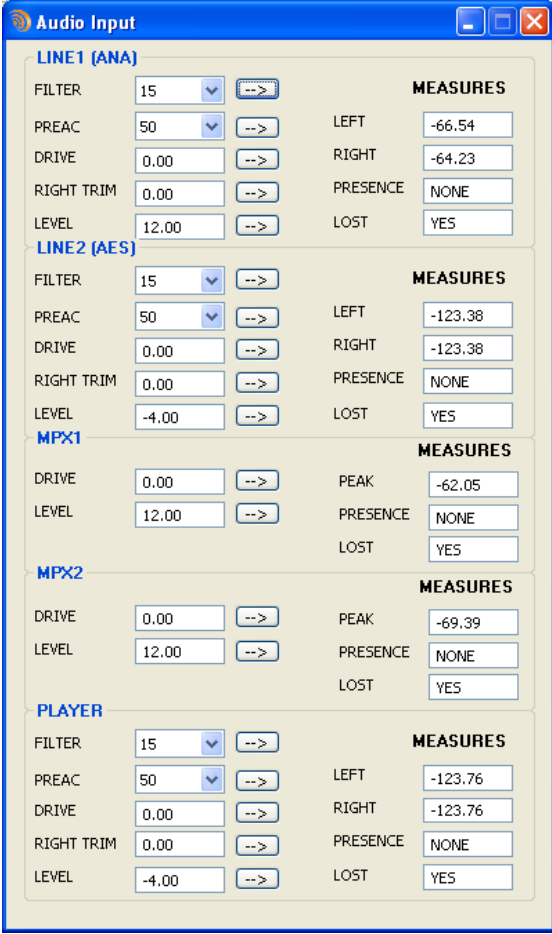


The main configuration window is divided into several sections:

- RF**: Includes a checkbox for "ON" and fields for FREQ, POWER, PWRMAX, MODE, and STAND-BY, each with a "-->" button.
- MEASURES**: Includes fields for PFWD, PREF, and VSWR.
- THRESHOLDS**: Includes a checkbox for "3DB/1DB AUTO" and fields for 3DB, VSWR, 1DB, and PRESENT, each with a "-->" button.
- SYSTEM ALARMS**: Includes radio buttons for FAULT, 3DB, VSWR, WARNING, 1DB, VSWRTRIP, and INTERLOCK.
- Buttons**: A group of buttons on the left (Audio Input, Modulator, RD5 Basic, Input Switch, Maintenance) and a group on the right (Events, System, Internal Gene, AGC/Limiter, ACU). A "START" button is at the bottom, highlighted with an orange box.

Audio input:

These values are described sections 5.4 to 5.8.



Audio Input

LINE1 (ANA)

FILTER	15	MEASURES	
PREAC	50	LEFT	-66.54
DRIVE	0.00	RIGHT	-64.23
RIGHT TRIM	0.00	PRESENCE	NONE
LEVEL	12.00	LOST	YES

LINE2 (AES)

FILTER	15	MEASURES	
PREAC	50	LEFT	-123.38
DRIVE	0.00	RIGHT	-123.38
RIGHT TRIM	0.00	PRESENCE	NONE
LEVEL	-4.00	LOST	YES

MPX1

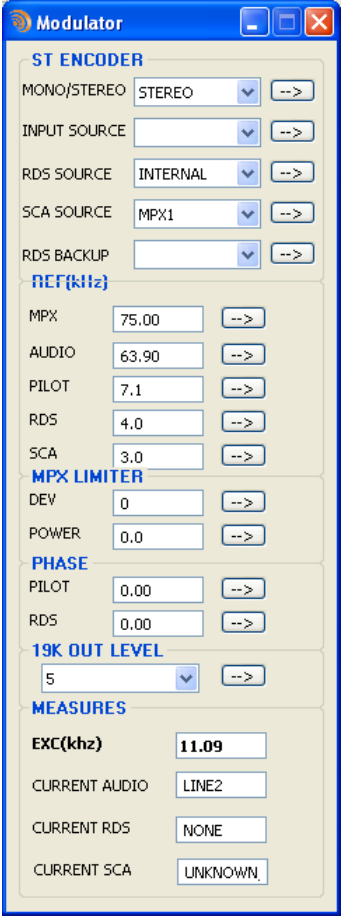
DRIVE	0.00	MEASURES	
LEVEL	12.00	PEAK	-62.05
		PRESENCE	NONE
		LOST	YES

MPX2

DRIVE	0.00	MEASURES	
LEVEL	12.00	PEAK	-69.39
		PRESENCE	NONE
		LOST	YES

PLAYER

FILTER	15	MEASURES	
PREAC	50	LEFT	-123.76
DRIVE	0.00	RIGHT	-123.76
RIGHT TRIM	0.00	PRESENCE	NONE
LEVEL	-4.00	LOST	YES



Modulator

ST ENCODER

MONO/STEREO: STEREO

INPUT SOURCE: []

RDS SOURCE: INTERNAL

SCA SOURCE: MPX1

RDS BACKUP: []

RF(kHz)

MPX: 75.00

AUDIO: 63.90

PILOT: 7.1

RDS: 4.0

SCA: 3.0

MPX LIMITER

DEV: 0

POWER: 0.0

PHASE

PILOT: 0.00

RDS: 0.00

19K OUT LEVEL

5

MEASURES

EXC(kHz): 11.09

CURRENT AUDIO: LINE2

CURRENT RDS: NONE

CURRENT SCA: UNKNOWN

Modulator:

These values are described section 5.9.

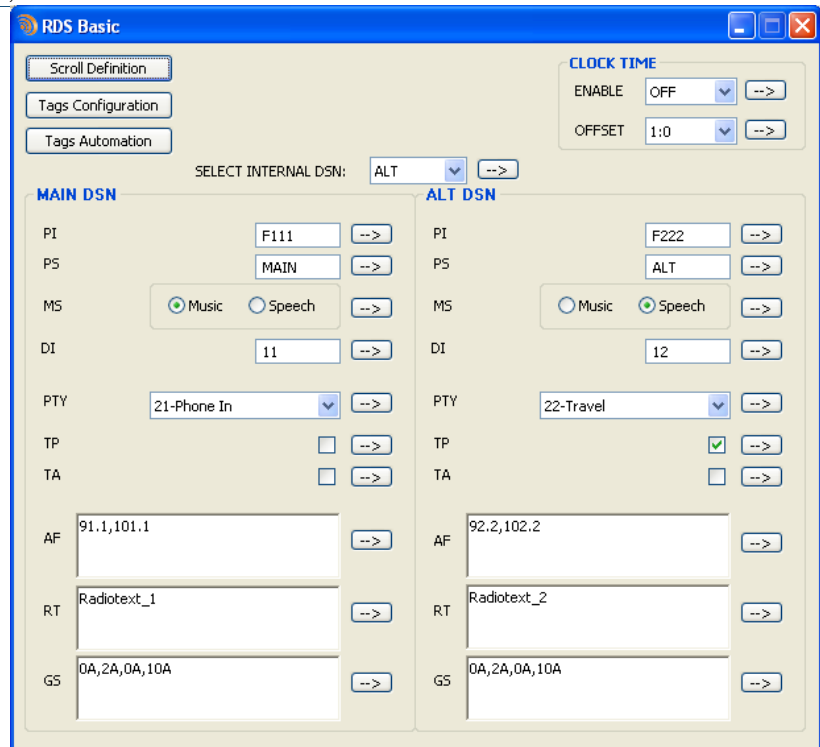
Static RDS:

These values are described section 5.13.

They are only available if the Basic RDS option is enabled.

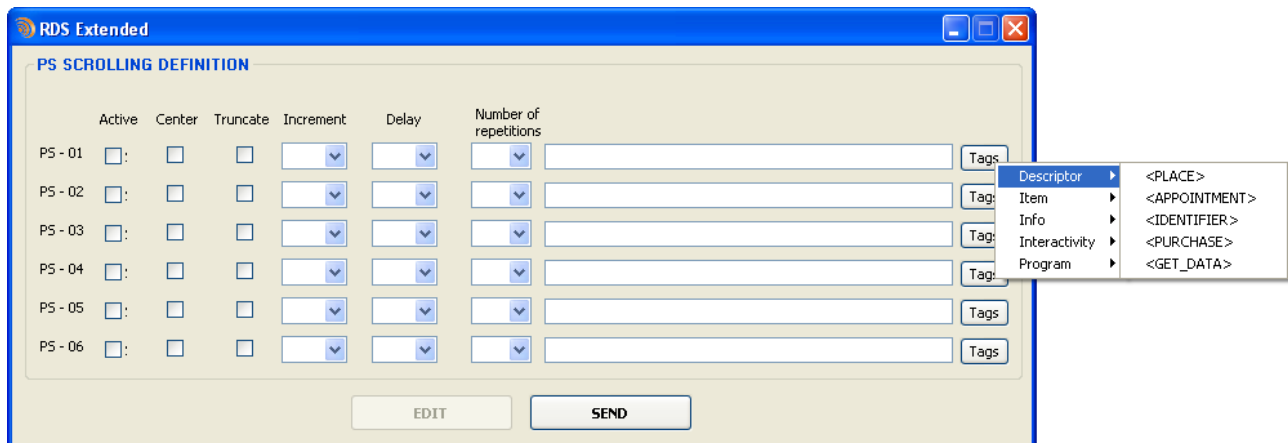
On the Basic RDS page, set the main DSN and the alternate DSN.

On this page, three buttons give you access to PS scroll management (not available with the front panel application).



The RDS Basic window shows configuration for Main and Alternate DSNs. It includes fields for PI, PS, MS (Music/Speech), DI, PTY, TP, TA, AF, RT, and GS. A 'SELECT INTERNAL DSN' dropdown is set to 'ALT'. A 'CLOCK TIME' section has 'ENABLE' set to 'OFF' and 'OFFSET' set to '1:0'.

Scroll Définition



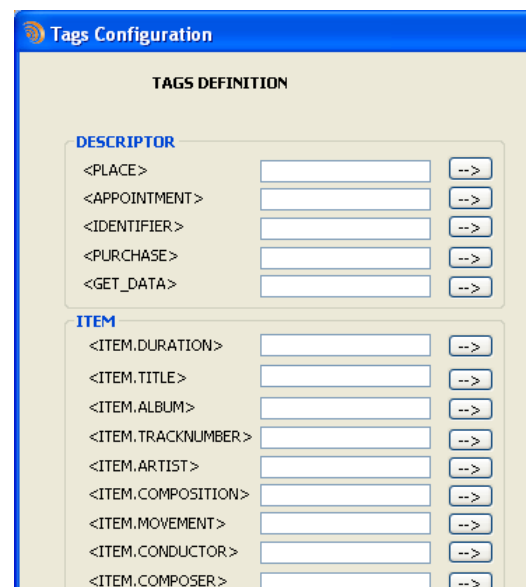
The RDS Extended window shows a table for PS SCROLLING DEFINITION. It has columns for Active, Center, Truncate, Increment, Delay, and Number of repetitions. A 'Tags' button is visible next to each row. A dropdown menu is open, showing options: Descriptor, Item, Info, Interactivity, Program, and their corresponding tag values.

Dynamic fields can be inserted into all PS lines by clicking the 'Tags' button.

Tags Configuration: current value of dynamic fields.

Tags Automation: command definitions for automation software.

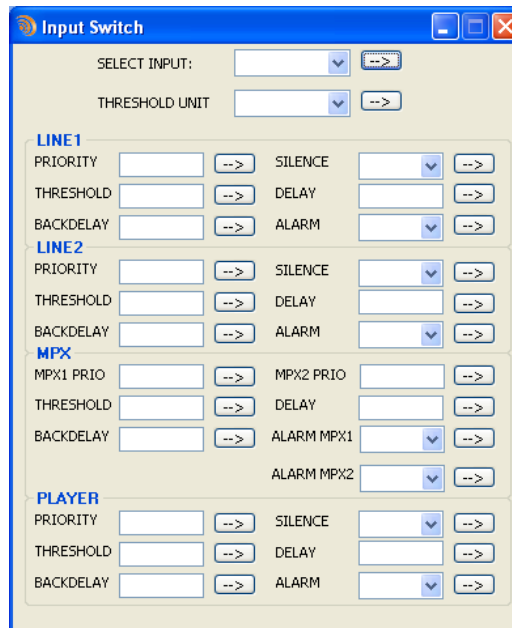
See section 9.5.2 for a complete list of tags.



The Tags Configuration window shows TAGS DEFINITION. It has sections for DESCRIPTOR and ITEM. Each section contains a list of tags with corresponding input fields and buttons.

Input Switch:

These values are described section 5.3.



Input Switch

SELECT INPUT: -->

THRESHOLD UNIT -->

LINE1

PRIORITY --> SILENCE -->

THRESHOLD --> DELAY -->

BACKDELAY --> ALARM -->

LINE2

PRIORITY --> SILENCE -->

THRESHOLD --> DELAY -->

BACKDELAY --> ALARM -->

MPX

MPX1 PRIO --> MPX2 PRIO -->

THRESHOLD --> DELAY -->

BACKDELAY --> ALARM MPX1 -->

ALARM MPX2 -->

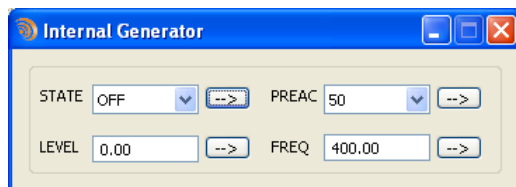
PLAYER

PRIORITY --> SILENCE -->

THRESHOLD --> DELAY -->

BACKDELAY --> ALARM -->

Internal Generator:



Internal Generator

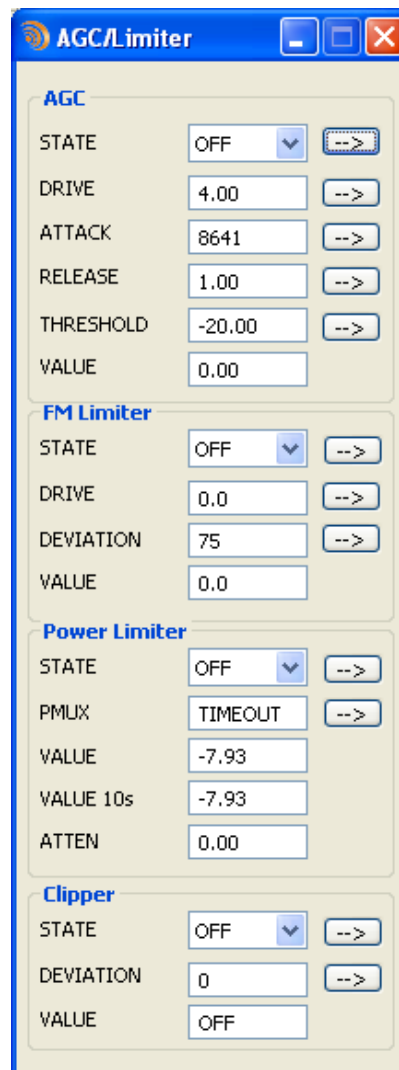
STATE OFF --> PREAC 50 -->

LEVEL 0.00 --> FREQ 400.00 -->

These values are described section 5.8.

AGC/Limiter:

These values are described section 5.12.



AGC/Limiter

AGC

STATE OFF -->

DRIVE 4.00 -->

ATTACK 8641 -->

RELEASE 1.00 -->

THRESHOLD -20.00 -->

VALUE 0.00

FM Limiter

STATE OFF -->

DRIVE 0.0 -->

DEVIATION 75 -->

VALUE 0.0

Power Limiter

STATE OFF -->

PMUX TIMEOUT -->

VALUE -7.93

VALUE 10s -7.93

ATTEN 0.00

Clipper

STATE OFF -->

DEVIATION 0 -->

VALUE OFF

Maintenance:

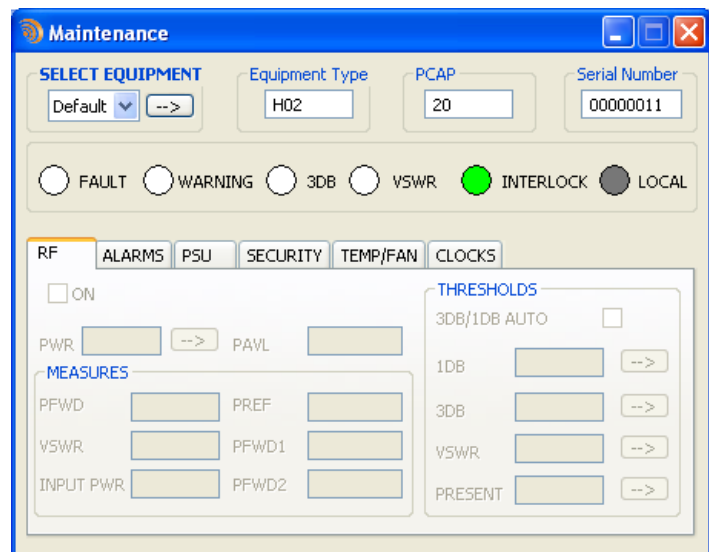
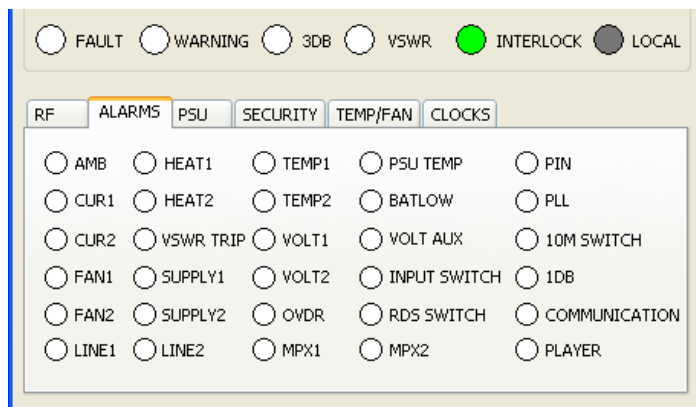
This window gives access to information specific to each module of a modular transmitter (Helios FM + Goliath FM). The menu 'Select equipment' allows the selection of the desired module. In the case of a compact transmitter, the 'default' module is the only choice.

LEDs give the overall status of the module and a set of tabs present maintenance information.

RF tab:

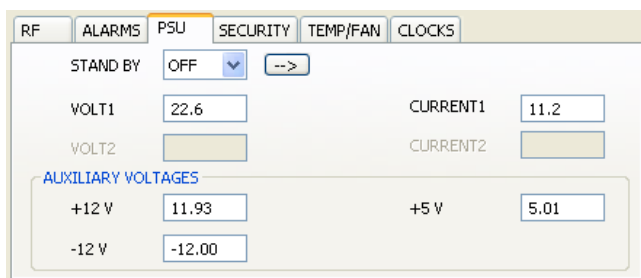
These values are described section 5.2.

They are greyed out for compact transmitters; they can be modified on the main window.

Alarms tab:

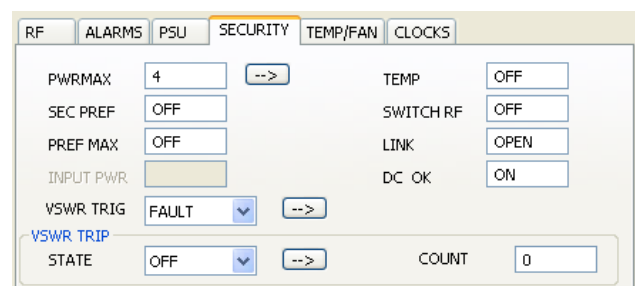
Alarms are described in section 7.2.5.



PSU tab:

Security tab:

These values are described section 5.2.



Temp/Fan tab:

RF	ALARMS	PSU	SECURITY	TEMP/FAN	CLOCKS
AMB MAX		50	-->	PSU TEMP	
AMB		28		PSU TEMP MAX	
HEAT MAX		65	-->		
HEAT1		33		FAN1 SPEED	
HEAT2				FAN2 SPEED	

RF	ALARMS	PSU	SECURITY	TEMP/FAN	CLOCKS
10M		NOT PRES	CLK	INTERNAL	
1PPS		NOT PRES	10M Operation	AUTO	-->
PLL		LOCK			

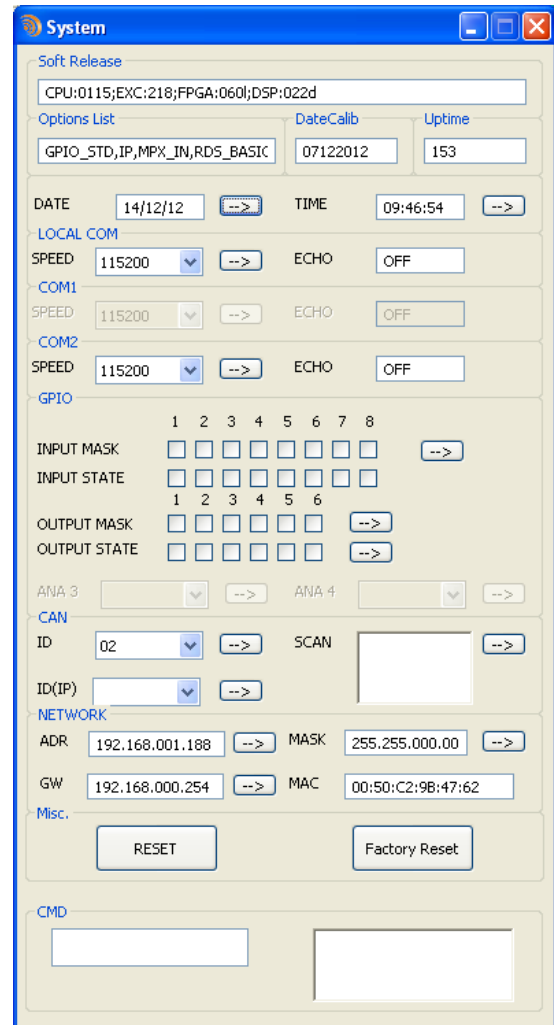
Clocks tab:**Events:**

Events	
GET LOG	CLEAR LOG
1:01/01/11-01:16 ... CURRENT1 OK 2:01/01/11-01:16 ... DISABLED RF POWER 3:01/01/11-01:15 ... ENABLED RF POWER 4:01/01/11-01:15 ... ENABLED RF POWER 5:01/01/11-01:15 ... ENABLED RF POWER 6:01/01/11-01:14 ... ENABLED RF POWER 7:01/01/11-01:14 ... ENABLED RF POWER 8:01/01/11-01:14 ... ENABLED RF POWER 9:01/01/11-01:14 ... CURRENT1 TOO HIGH 10:01/01/11-01:14 ... CURRENT1 OK 11:01/01/11-01:14 ... SET FREQUENCY 101.30 MHz 12:01/01/11-00:04 ... START ALARM INPUT SWITCH 13:01/01/11-00:04 ... START WARNING 14:01/01/11-00:04 ... CURRENT1 TOO HIGH 15:01/01/11-00:04 ... START 16:01/01/11-00:01 ... POWER FAILURE 17:01/01/11-00:01 ... CURRENT1 TOO HIGH 18:01/01/11-00:01 ... SET RF POWER=20 W 19:01/01/11-00:01 ... ENABLED RF POWER 20:01/01/11-00:00 ... START WARNING 21:01/01/11-00:00 ... START ALARM INPUT SWITCH 22:01/01/11-00:00 ... START 23:01/01/11-00:00 ... POWER FAILURE 24:01/01/11-00:00 ... START WARNING 25:00/00/00-00:00 ... START ALARM INPUT SWITCH	

System:

See chapter 10 for a description of GPIOs. Mask and State are equivalent to .MASK and .STATE serial commands described section 10.2.5.

For a list of control and monitoring functions, please see sections 10.2.2 and 10.2.3.

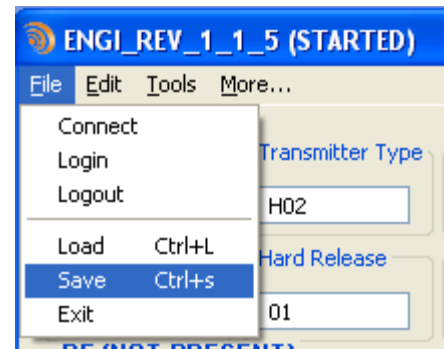


8.2.3. Saving parameters

With the application you may also save parameters, before upgrading or as a backup for instance.

- Select the Files / Save menu.
- Select the location and name for the backup file. Default name is `module_type_serial_number.conf`.

To load a previously saved configuration, use the Files / Load menu.



i Loading or saving a configuration file stops real time display of parameters. Simply click the “Start” button on the main window to retrieve them again.

9. THE EMBEDDED WEBSITE

9.1. Introduction

This function is available when the optional TCP/IP board is installed on the transmitter.

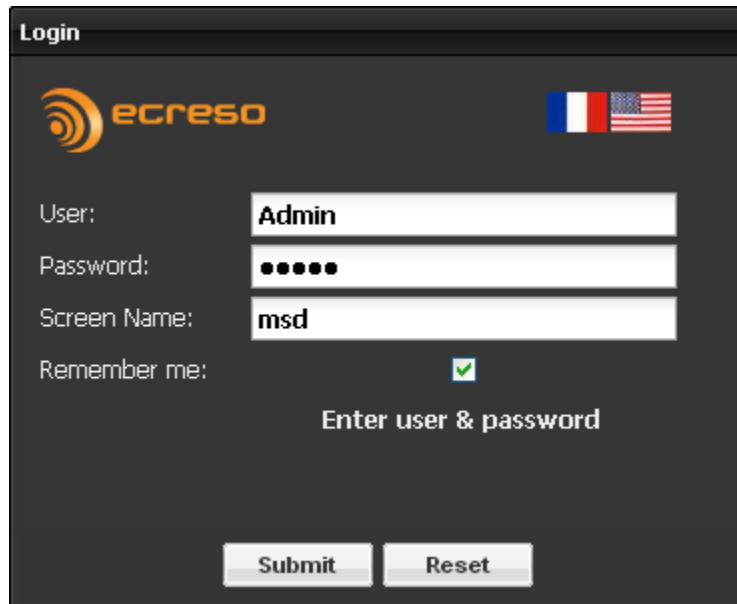
9.2. Connecting to the embedded web site

For remote access, connect to the transmitter's embedded web site. Simply open a web browser (Google Chrome, Mozilla Firefox ...) and enter the transmitter's IP address in the address bar (set on the front panel).

i *Though the web application is compatible with most browsers, performances vary greatly from on browser to another. For this reason, we recommend you use Google Chrome. You may also use Google Chrome Portable available on the Ecreso CD; this version can work without being installed on your PC (it can be on a flash drive).*

Select the language if necessary.

Enter the user name and password; the screen name is used to chat:



Two user levels are available:

- Administrator (Admin / admin by default). The administrator has full rights
- Guest (Guest / guest by default). The guest has read-only access to all pages except the user management page.

Check the box to save connection information. This process is managed by the web browser cookies; login and passwords are saved for 15 days.




i *If several users are connected at once, they all can send commands and change parameters. Le last edit will always be taken into account.*





The tool bar on top of the page enables access to all pages of the site: the user can view the status, access receiver configuration, RDS data, audio backup, system configuration and chat.

Data can be both viewed and modified.

There are two indicators on the right of the tool bar. The one on top enables all connected users to know about current notifications:

-  No current notification
-  A notification has been sent
-  A notification has been processed

The one on the bottom shows the internal communication status between the TCP/IP board and the transmitter:

-  Communication is OK
-  Communication is down, the information of the site might be incorrect

The whole bar turns:

- Orange when the unit is in local mode,
- Red in case of communication loss for more than 30 seconds
- Blue when in standby mode.

A series of indicators on the bottom of the screen enables all connected users to know the transmitter current status:




Local mode  Transmitter in standard mode

 Transmitter in local mode

Fault  No fault

 Current fault alarm

Warning  No warning

 Current warning alarm

3 dB Alarm  No alarm

 Current 3 dB alarm

1 dB Alarm  No alarm



 Current 1 dB alarm

VSWR Alarme  No alarm

 Current VSWR alarm

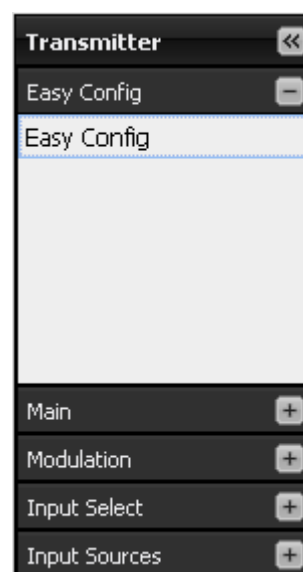
Interlock		Interlock not present
		Interlock present
RF On		RF disabled
		RF enabled

The menu on the left allows navigating to the various pages of each section.

Clicking on the double-arrow button  hides the menu. Clicking on the button  displays it again.

A section may include one or more pages; display of hide links to reach them by clicking the buttons  or .

The tool bar, the indicators and the menu will be available on all pages of the site.



9.3. Viewing the Status

9.3.1. Main status

This page displays the main parameters of the transmitter (read-only).

Main	
Transmitter	
Name:	H2000W TEST
Frequency (MHz):	98.00
Power setting (W):	100
Forward power (W):	100
Reflected power (W):	0.0
VSWR:	1.0
Peak Deviation (kHz):	75.08
Coder:	Stereo
Current Audio:	Line2
Current RDS:	Internal
Current SCA:	None
Inputs	
Line 1 Left Peak (dBu):	12.06
Line 1 Right Peak (dBu):	12.06
Line 2 Left Peak (dBfs):	-3.95
Line 2 Right Peak (dBfs):	-3.95
MPX 1 peak (dBu):	12.03
MPX 2 peak (dBu):	12.03
Switched to Backup:	<input checked="" type="radio"/>
RDS Switched to Backup:	<input type="radio"/>

The "Switched to Backup" indicator shows:

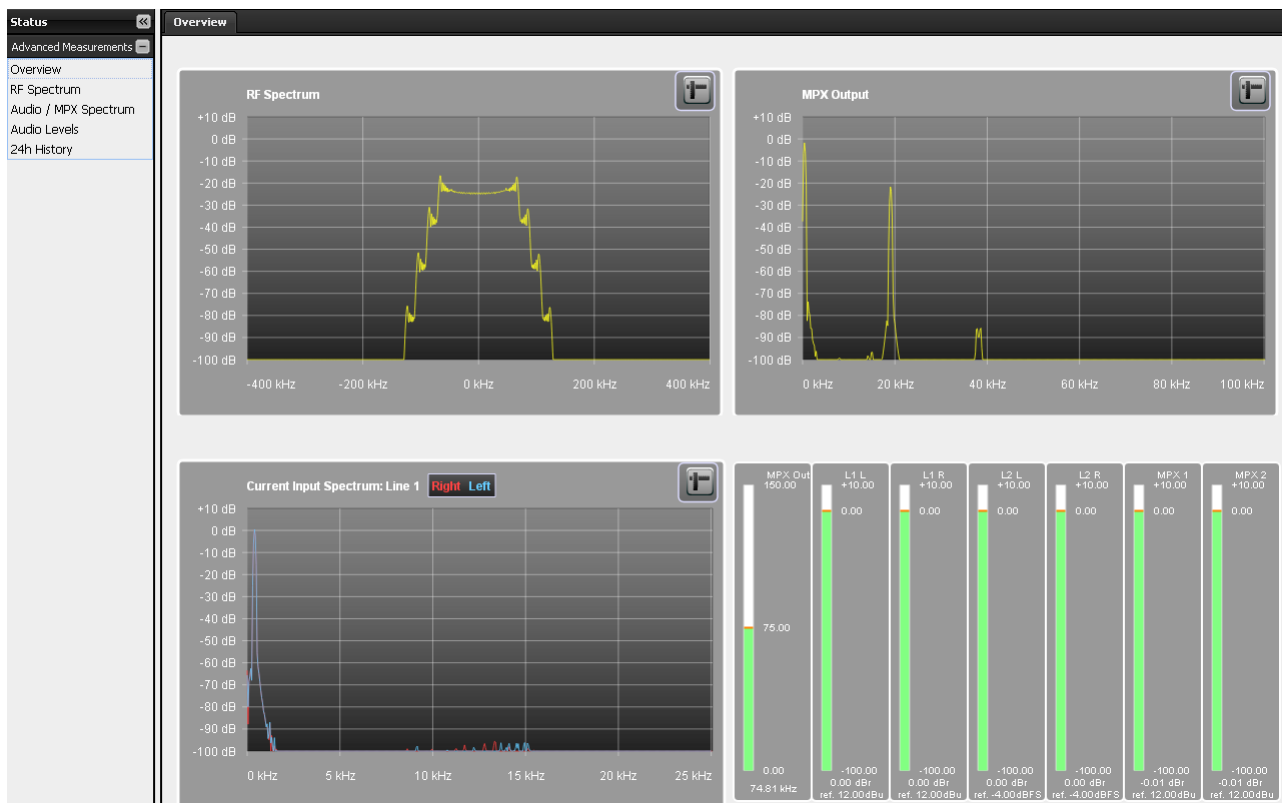
- ☒ Main input is on
- ☐ Switch to backup input

9.3.2. Advanced measurements

Overview

Four graphs are available on this page:

- RF spectrum
- MPX output
- Current input spectrum
- Audio level



On each curve, the button  displays the abscissa and ordinate of a specific point. Click and drag the abscissa's label to view other points on the curve.



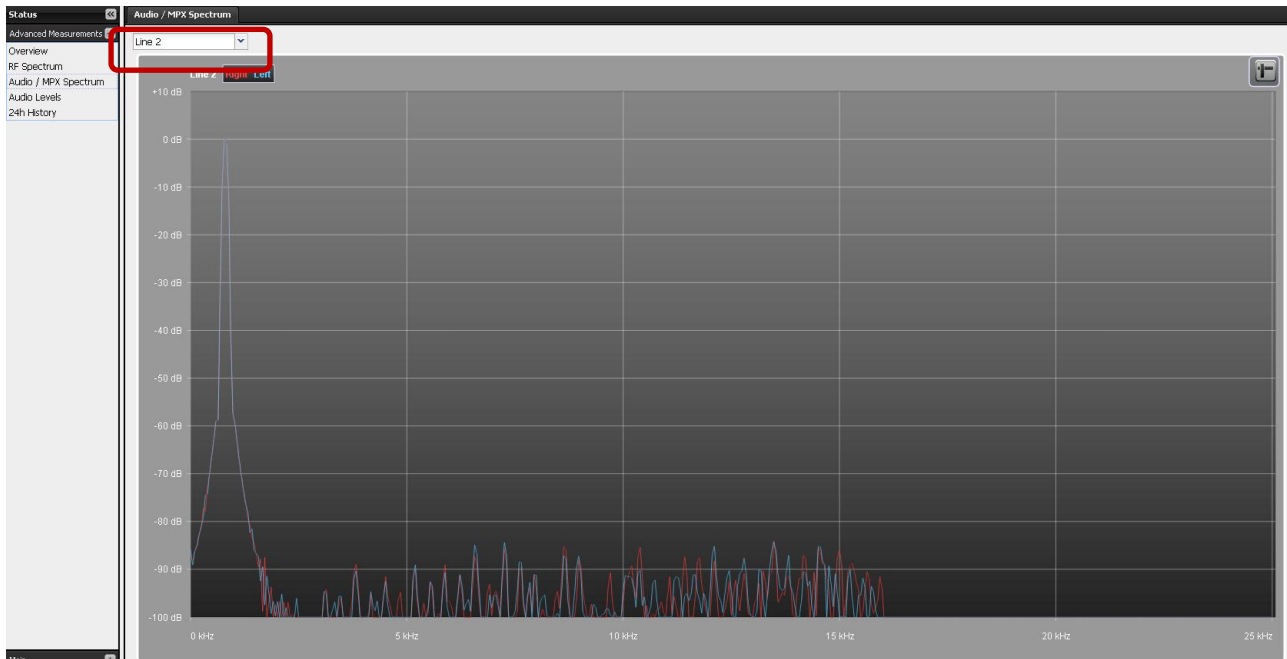
Curves are displayed in dBr; the reference takes into account the drive and the trim.

For instance, if the actual input level is 12 dBu and the set input level is 12 dBu, the drive is set to -1 dB and the trim is set to -0.1 dB, the left level will be displayed at +1 dBr and the right at +1.1 dBr.

The **RF Spectrum** page displays the same curve as on the overview page but on a larger scale.

The **Audio/MPX Spectrum** page displays either of the selected curves:

- Line 1
- Line 2
- MPX inputs
- Audio backup
- MPX output



The **Audio levels** page displays the same curve as on the overview page but on a larger scale.



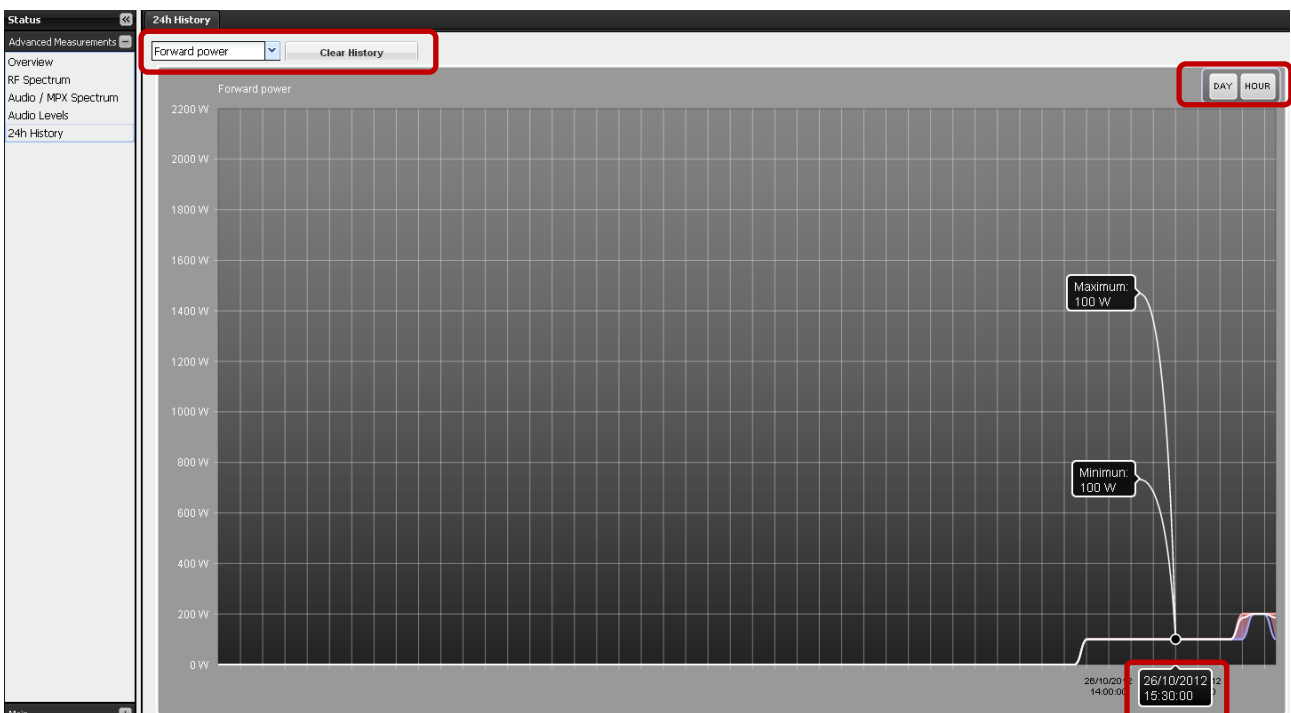
Red lines the reference level. On the MPX outputs graph, the reference level is the total deviation, which can be set in the transmitter configuration pages. If the total deviation is changed, the audio levels page has to be refreshed to display the new value.

24 hour history

This page displays measurements over the last day (default view) or the last hour:

- Direct power
- Forward power
- VSWR
- Voltage
- Current
- Global efficiency
- Mosfet efficiency
- Ambient temperature
- Preamplifier power*
- Radiator temperature*
- Fan speed*

* Available measurements vary depending on the power of the transmitter



To display a specific day or time, slide the abscissa's label.

A button allows clearing the history.

i Please note that these are Helios FM only readings: for modular transmitters, they do not include measurements of the Goliath FM amplifier(s).

9.4. Transmitter configuration



Click the button to access transmitter configuration pages.

This section displays the parameters of the transmitter so they can be updated.

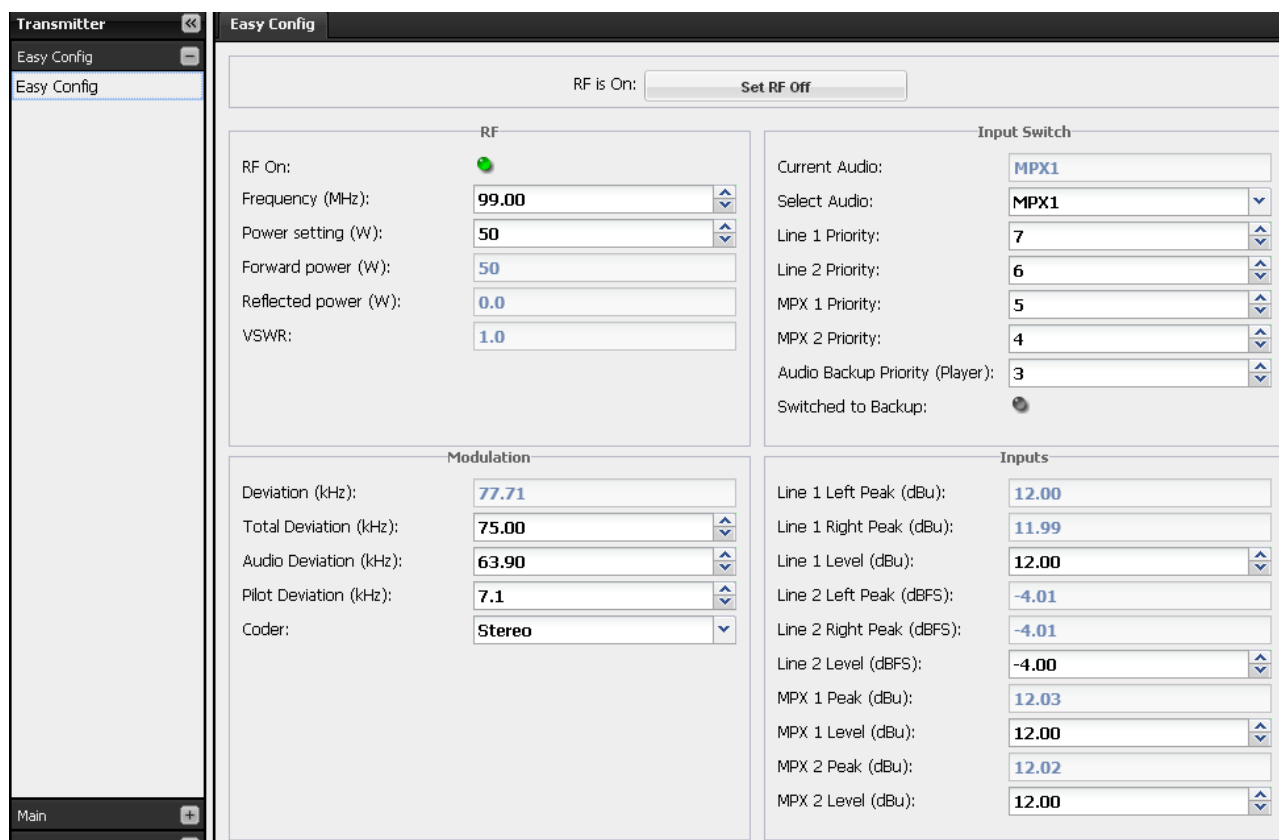


When values have been changed, click the button to save the new settings.

i If the transmitter is in local mode (orange indicator at the bottom of the page), you will not be able to modify settings.





9.4.1. Easy configuration

All basic parameters are available on this page. They are available on the front panel in the Easy mode. Please refer to parameter descriptions sections 5.2 to 5.8 for more details.



With the button on top of the page, enable/disable the RF

Indicators show:

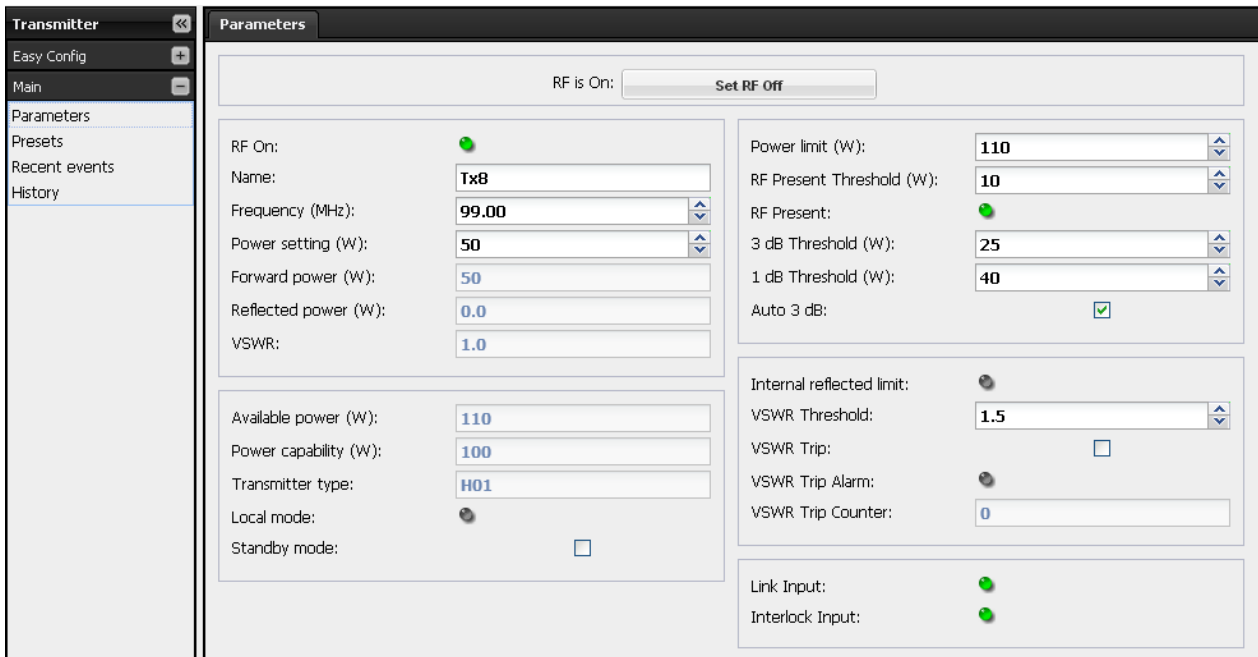
- | | | |
|--------------------|---|------------------------|
| RF on |  | RF enabled |
| |  | RF off |
| Switched to Backup |  | Main input is on |
| |  | Switch to backup input |

For a complete configuration, use the Main, Modulation, Input Select and Input Sources pages.

9.4.2. Main configuration

Parameters



Set RF parameters on this page. Please refer to parameter descriptions section 5.2 for more details.



The screenshot shows the 'Parameters' configuration page for the Helios FM transmitter. The left sidebar contains navigation links: Transmitter, Easy Config, Main, Parameters (selected), Presets, Recent events, and History. The main area is divided into several sections:

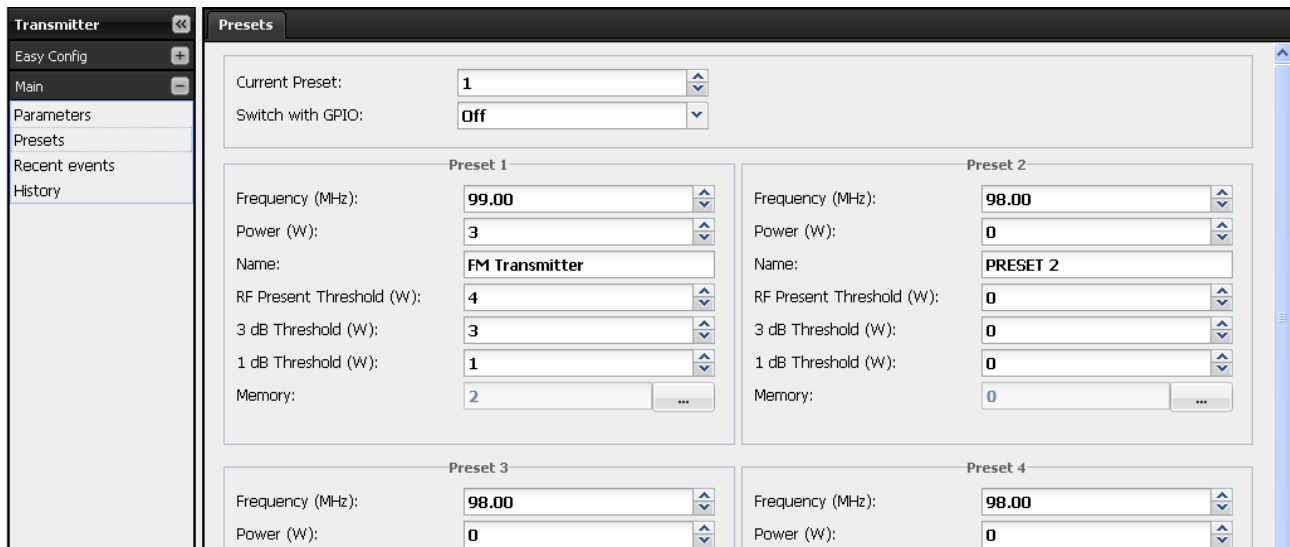
- RF On:** A toggle switch labeled 'Set RF Off'.
- RF On:** A green indicator light.
- Name:** A text field containing 'Tx8'.
- Frequency (MHz):** A numeric field with '99.00' and up/down arrows.
- Power setting (W):** A numeric field with '50' and up/down arrows.
- Forward power (W):** A numeric field with '50'.
- Reflected power (W):** A numeric field with '0.0'.
- VSWR:** A numeric field with '1.0'.
- Power limit (W):** A numeric field with '110' and up/down arrows.
- RF Present Threshold (W):** A numeric field with '10' and up/down arrows.
- RF Present:** A green indicator light.
- 3 dB Threshold (W):** A numeric field with '25' and up/down arrows.
- 1 dB Threshold (W):** A numeric field with '40' and up/down arrows.
- Auto 3 dB:** A checked checkbox.
- Available power (W):** A numeric field with '110'.
- Power capability (W):** A numeric field with '100'.
- Transmitter type:** A dropdown menu showing 'H01'.
- Local mode:** A radio button.
- Standby mode:** A checkbox.
- Internal reflected limit:** A radio button.
- VSWR Threshold:** A numeric field with '1.5' and up/down arrows.
- VSWR Trip:** A checkbox.
- VSWR Trip Alarm:** A radio button.
- VSWR Trip Counter:** A numeric field with '0'.
- Link Input:** A green indicator light.
- Interlock Input:** A green indicator light.

Indicators show:

RF On		RF disabled
		RF enabled
Local mode		Transmitter in standard mode
		Transmitter in local mode
RF Present		RF not detected
		RF detected
Internal reflected limit		Normal internal reflected limit
		Over the max internal reflected limit (*depending on configuration of command CONF.VSWR_TRIG)
VSWR Trip alarm		No alarm
		Current VSWR trip alarm
Link input		Link disabled
		Active link
Interlock input		Interlock not present
		Interlock present

Presets

Manage up to 8 presets on this page.



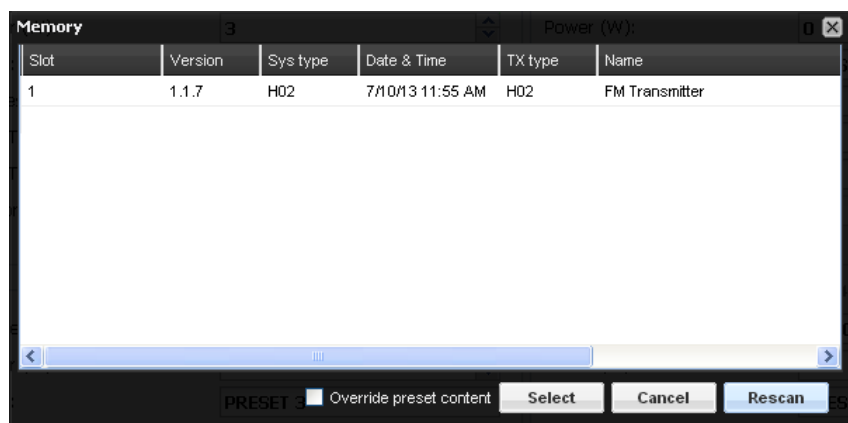
Eight presets are available. For each, manually set the name, frequency, power and 1 dB and 3 dB alarm thresholds or link each preset to a memory saved on the μ SD card.

When using memories, the whole transmitter configuration is associated to the preset: RF, input and RDS configuration.

To link a preset to a memory, click the button, click “Rescan” to display the content of the card and select the slot of the memory.

You may override the present content visible and editable on screen.

To save a memory on the μ SD card, see section 9.7.3.



On the top of this page, set the current preset and whether it can be switched with GPIOs (optional standard GPIO board).

To manage presets 1 to 4 with GPIOs, select ‘4 inputs’:

Preset	Remote Control	Input name	Common
1	RC5	CONF3(22)	RC_COMMUN(24)
2	RC6	CONF4(10)	RC_COMMUN(24)
3	RC7	CONF5(23)	RC_COMMUN(24)
4	RC8	CONF6(11)	RC_COMMUN(24)

To manage presets 1 to 8 with GPIOs, select '8 inputs':

Preset	Remote Control	Input name	Common
1	RC1	OPT1A(20)	RC_COMMUN(24)
2	RC2	OPT2A(8)	RC_COMMUN(24)
3	RC3	CONF1(21)	RC_COMMUN(24)
4	RC4	CONF2(9)	RC_COMMUN(24)
5	RC5	CONF3(22)	RC_COMMUN(24)
6	RC6	CONF4(10)	RC_COMMUN(24)
7	RC7	CONF5(23)	RC_COMMUN(24)
8	RC8	CONF6(11)	RC_COMMUN(24)

For more details on GPIOs' working principle and pinout, see chapter 10.

Recent events

View the last 200 events on this page.

Transmitter	Recent events
Easy Config	Clear Log CSV Export
Main	
Parameters	
Presets	
Recent events	
History	

Sub-System	Start	Severity	Source	Event	Description
Equipment	07/04/2013 07:46:55 GMT	Notice	Alarm	RF Present	ON
Transmitter	07/04/2013 07:46:53 GMT	Info	Configuration	Opmode	ON
Transmitter	07/04/2013 07:46:53 GMT	Notice	Alarm	RF Present	ON [TX.PFWD=50]
Equipment	07/04/2013 07:46:49 GMT	Error	Alarm	RF Present	OFF
Transmitter	07/04/2013 07:46:49 GMT	Info	Configuration	Opmode	OFF
Transmitter	07/04/2013 07:46:49 GMT	Error	Alarm	RF Present	OFF [TX.PFWD=0]
Equipment	07/04/2013 07:46:39 GMT	Info	Configuration	VSWR Threshold set to	1.6
Transmitter	07/04/2013 07:46:37 GMT	Info	Configuration	VSWR Threshold set to	1.6
Equipment	07/04/2013 07:41:24 GMT	Info	Configuration	Audio Deviation set to	63.90
Equipment	07/04/2013 07:41:22 GMT	Info	Configuration	RDS Source set to	INTERNAL
Equipment	07/04/2013 07:41:22 GMT	Info	Configuration	Audio Source set to	LINE2
Equipment	07/04/2013 07:37:25 GMT	Info	Configuration	Coder set to	STEREO
Equipment	07/04/2013 07:37:23 GMT	Info	Configuration	Audio Deviation set to	67.90
Equipment	07/04/2013 07:37:23 GMT	Notice	Alarm	MPX2 Alarm	OFF [CODER.CURRENT.AUDIO=MPX2]
Equipment	07/04/2013 07:37:23 GMT	Notice	Alarm	Fault	OFF
Transmitter	07/04/2013 07:37:21 GMT	Notice	Alarm	Fault	OFF
Equipment	07/04/2013 07:37:17 GMT	Warning	Alarm	MPX2 Alarm	ON [CODER.CURRENT.AUDIO=MPX2]
Equipment	07/04/2013 07:37:17 GMT	Error	Alarm	Fault	ON
Transmitter	07/04/2013 07:37:15 GMT	Error	Alarm	Fault	ON
Equipment	07/04/2013 07:37:07 GMT	Notice	Alarm	MPX2 Alarm	OFF [CODER.CURRENT.AUDIO=MPX2]
Equipment	07/04/2013 07:37:07 GMT	Notice	Alarm	Fault	OFF

Click on a column title to display a menu that will allow you to sort the column and to display or hide other columns.

The event color gives its degree of severity:

- **Red**: errors
- **Yellow**: warning
- **Green**: notice, end of a warning or error
- **Grey**: information

Sub-System	Start	Severity
Equipment	07/04/2013 07:46:55 GMT	Notice
Transmitter	07/04/2013 07:46:53 GMT	Info
Transmitter	07/04/2013 07:46:53 GMT	Notice
Equipment	07/04/2013 07:46:49 GMT	Error
Transmitter	07/04/2013 07:46:49 GMT	Info
Transmitter	07/04/2013 07:46:49 GMT	Error
Equipment	07/04/2013 07:46:39 GMT	Info
Transmitter	07/04/2013 07:46:37 GMT	Info
Equipment	07/04/2013 07:41:24 GMT	Info
Equipment	07/04/2013 07:41:22 GMT	Info
Equipment	07/04/2013 07:41:22 GMT	Info
Equipment	07/04/2013 07:37:25 GMT	Info
Equipment	07/04/2013 07:37:23 GMT	Info
Equipment	07/04/2013 07:37:23 GMT	Notice
Equipment	07/04/2013 07:37:23 GMT	Notice
Transmitter	07/04/2013 07:37:21 GMT	Notice
Equipment	07/04/2013 07:37:17 GMT	Warning
Equipment	07/04/2013 07:37:17 GMT	Error
Transmitter	07/04/2013 07:37:15 GMT	Error
Equipment	07/04/2013 07:37:07 GMT	Notice
Equipment	07/04/2013 07:37:07 GMT	Notice

You may clear the log using the “Clear Log” button.

You may also export the log: clicking the “CSV export” button will create the file log_rt.csv in you download directory.

History

With this page, filter events according to dates and display a set number of results. A maximum of 1000 events are kept.

Transmitter <<
 Easy Config +
 Main -
 Parameters
 Presets
 Recent events
 History

History
☒ Filters

Limit: ☒ 10
 From: ☒ 7/4/13
 To: ☒ 7/4/13

Sub-System	Start	Severity	Source	Event	Description
Equipment	07/04/2013 07:46:55 GMT	Notice	Alarm	RF Present	ON
Transmitter	07/04/2013 07:46:53 GMT	Info	Configuration	Opmode	ON
Transmitter	07/04/2013 07:46:53 GMT	Notice	Alarm	RF Present	ON [TX.PFWD=50]
Equipment	07/04/2013 07:46:49 GMT	Error	Alarm	RF Present	OFF
Transmitter	07/04/2013 07:46:49 GMT	Info	Configuration	Opmode	OFF
Transmitter	07/04/2013 07:46:49 GMT	Error	Alarm	RF Present	OFF [TX.PFWD=0]
Equipment	07/04/2013 07:46:39 GMT	Info	Configuration	VSWR Threshold set to	1.6
Transmitter	07/04/2013 07:46:37 GMT	Info	Configuration	VSWR Threshold set to	1.6
Equipment	07/04/2013 07:41:24 GMT	Info	Configuration	Audio Deviation set to	63.90
Equipment	07/04/2013 07:41:22 GMT	Info	Configuration	RDS Source set to	INTERNAL

Results can be sorted and exported as with recent events.

The name of the filtered export log is log_filter.csv.

9.4.3. Modulation configuration

Deviation

Set the deviation on this page. Please refer to parameter descriptions section 5.9 for more details.

Transmitter	Deviation	
Easy Config		
Main		
Modulation		
Deviation		
Settings		
AGC/Limiter		

Total Deviation (kHz):	75.00
Audio Deviation (kHz):	63.90
Pilot Deviation (kHz):	7.1
RDS Deviation (kHz):	4.0
SCA Deviation (kHz):	0.0
Deviation (kHz):	74.87
Peak Deviation (kHz):	74.88

Settings

Set the RDS and SCA sub-carriers on this page. Please refer to parameter descriptions section 5.11 for more details.

Transmitter	Settings	
Easy Config		
Main		
Modulation		
Deviation		
Settings		
AGC/Limiter		

Coder:	Stereo
RDS Source:	Internal
SCA Source:	Off
RDS Backup:	Off
Current Audio:	Line2
Current RDS:	Internal
Current SCA:	None
RDS Switched to Backup:	<input checked="" type="radio"/>
RDS Phase (°):	0.00
19 kHz Output Level:	5

The "RDS Switched to Backup" indicator shows:

- ☒ Main RDS input is on
- ☐ RDS switched to backup input

AGC/Limiter

Set the limiter on this page. Please refer to parameter descriptions section 5.12 for more details.

Transmitter		AGC/Limiter	
Easy Config	+		
Main	+		
Modulation	+		
Deviation			
Settings			
AGC/Limiter			
		AGC Status: <input type="text" value="Off"/> Depth (dB): <input type="text" value="0.00"/> Drive (dB): <input type="text" value="4.00"/> Attack (dB/s): <input type="text" value="8641"/> Release (dB/s): <input type="text" value="1.00"/> Threshold (dB): <input type="text" value="-20.00"/>	Limiter Status: <input type="text" value="Off"/> Attenuation (dB): <input type="text" value="0.0"/> Max Deviation (kHz): <input type="text" value="75"/> Drive (dB): <input type="text" value="0.0"/>
		Clipper Status: <input type="text" value="Off"/> Clipping: <input type="text" value="0"/> Clip (kHz): <input type="text" value="75"/>	MPX Power Limiter Status: <input type="text" value="Off"/> Norm. MPX Pwr (dB): <input type="text" value="10.69"/> Predict. MPX Pwr (dB): <input type="text" value="10.69"/> Attenuation (dB): <input type="text" value="0.00"/> Target (dB): <input type="text" value="0.0"/>



9.4.4. Input Selection

Auto Switch

Set the priority of the various inputs on this page. Please refer to parameter descriptions section 5.3 for more details.

Transmitter		Auto Switch	
Easy Config	+		
Main	+		
Modulation	+		
Input Select	+		
Auto Switch			
Silence Detector			
		Line 1 Priority: <input type="text" value="7"/> Line 2 Priority: <input type="text" value="6"/> MPX 1 Priority: <input type="text" value="5"/> MPX 2 Priority: <input type="text" value="4"/> Audio Backup Priority (Player): <input type="text" value="3"/> Select Audio: <input type="text" value="MPX1"/> Current Audio: <input type="text" value="MPX1"/> Switched to Backup: <input type="text" value="0"/>	

The "Switched to Backup" indicator shows:

-  Main input is on
-  Switch to backup input

Silence Detector

Set silence detector parameters for various inputs on this page. Please refer to parameter descriptions section 5.3 for more details.

Transmitter	Silence Detector	
Easy Config	Unit display mode: <u>Relative</u>	
Main		
Modulation		
Input Select		
Auto Switch		
Silence Detector		
	Line 1 Left (dBr): <input type="text" value="-0.01"/> Right (dBr): <input type="text" value="-0.01"/> Lost: <input type="text" value="No"/> Threshold (dBr): <input type="text" value="-36"/> Silence: <input type="text" value="Right"/> Delay (s): <input type="text" value="5"/> Back Delay (s): <input type="text" value="0"/> Trigger: <input type="text" value="None"/> Fault: <input type="checkbox"/>	Line 2 Left (dBr): <input type="text" value="-0.01"/> Right (dBr): <input type="text" value="-0.01"/> Lost: <input type="text" value="No"/> Threshold (dBr): <input type="text" value="-38"/> Silence: <input type="text" value="Both"/> Delay (s): <input type="text" value="5"/> Back Delay (s): <input type="text" value="0"/> Trigger: <input type="text" value="None"/> Fault: <input type="checkbox"/>
	MPX MPX 1 (dBr): <input type="text" value="0.02"/> MPX 1 Lost: <input type="text" value="No"/> MPX 2 (dBr): <input type="text" value="0.02"/> MPX 2 Lost: <input type="text" value="No"/> Threshold (dBr): <input type="text" value="-10"/> Delay (s): <input type="text" value="5"/> Back Delay (s): <input type="text" value="0"/> MPX 1 Trigger: <input type="text" value="None"/> MPX 1 Fault: <input type="checkbox"/> MPX 2 Trigger: <input type="text" value="None"/> MPX 2 Fault: <input type="checkbox"/>	Audio Backup Left (dBr): <input type="text" value="-82.83"/> Right (dBr): <input type="text" value="-82.95"/> Lost: <input type="text" value="Yes"/> Threshold (dBr): <input type="text" value="-40"/> Silence: <input type="text" value="Left"/> Delay (s): <input type="text" value="5"/> Back Delay (s): <input type="text" value="4"/> Trigger: <input type="text" value="None"/> Fault: <input type="checkbox"/>

If the units are in the absolute mode, thresholds applied to Left and Right, and to MPX1 and MPX2 can be different; however, only left and MPX1 threshold can be set.

“Fault” indicators turn red when there is a loss of signal on the input. Depending on configuration a loss of signal will trigger a warning or a fault on the main status bar.

9.4.5. Input Sources

Line 1 / Line 2

Set the analog input (Line 1) or the AES input (Line 2) on these pages. Please refer to parameter descriptions sections 5.4 and 5.5 for more details.

Transmitter	Line 1
Easy Config	
Main	
Modulation	
Input Select	
Input Sources	
Line 1	Presence: <input type="text" value="Left+Right"/> Input type: <input type="text" value="Ana"/> Left Peak Max (dBu): <input type="text" value="12.07"/> Right Peak Max (dBu): <input type="text" value="12.06"/> Left Peak (dBu): <input type="text" value="12.06"/> Right Peak (dBu): <input type="text" value="12.06"/> Level (dBu): <input type="text" value="12.00"/> Drive (dB): <input type="text" value="0.00"/> Trim (dB): <input type="text" value="0.00"/> Filter (kHz): <input type="text" value="15"/> Pre emphasis (μs): <input type="text" value="50"/>
Line 2	
MPX	
Generator	

AES levels are in dBFS.

MPX

Set the MPX 1 and MPX 2 inputs on this page. Please refer to parameter descriptions section 5.6 for more details.

Transmitter	MPX
Easy Config	
Main	
Modulation	
Input Select	
Input Sources	
Line 1	
Line 2	
MPX	MPX 1 Presence: <input type="text" value="NONE"/> Peak Max (dBu): <input type="text" value="-61.50"/> peak (dBu): <input type="text" value="-61.62"/> Level (dBu): <input type="text" value="12.00"/> Drive (dB): <input type="text" value="0.00"/> MPX 2 Presence: <input type="text" value="NONE"/> Peak Max (dBu): <input type="text" value="-67.87"/> peak (dBu): <input type="text" value="-69.37"/> Level (dBu): <input type="text" value="12.00"/> Drive (dB): <input type="text" value="0.00"/>
Generator	

Audio backup

Set the audio backup player on this page. The backup file is selected on the audio backup configuration page (see section 9.6)

Transmitter	Audio Backup
Easy Config	
Main	
Modulation	
Input Select	
Input Sources	
Line 1	
Line 2	
MPX	
Audio Backup	
Generator	

Presence:	Left+Right
Left Peak Max (dBFS):	2.71
Right Peak Max (dBFS):	2.48
Left Peak (dBFS):	2.71
Right Peak (dBFS):	2.48
Level (dBFS):	-4.00
Drive (dB):	0.00
Trim (dB):	0.00
Filter (kHz):	15
Pre emphasis (μs):	50

Generator

Set the internal generator on this page. Please refer to parameter descriptions section 5.8 for more details.

Transmitter	Generator
Easy Config	
Main	
Modulation	
Input Select	
Input Sources	
Line 1	
Line 2	
MPX	
Generator	

State:	Off
Level (dBfs):	0.00
Frequency (Hz):	400.00
Pre emphasis (μs):	50

9.5. Setting the RDS data

i RDS data can only be set when the RDS license is enabled on the transmitter.



Click the button to access RDS data pages.

This section displays RDS parameters so they can be updated.



When values have been changed, click the button to save the new settings.

i If the transmitter is in local mode (orange indicator at the bottom of the page), you will not be able to modify settings.

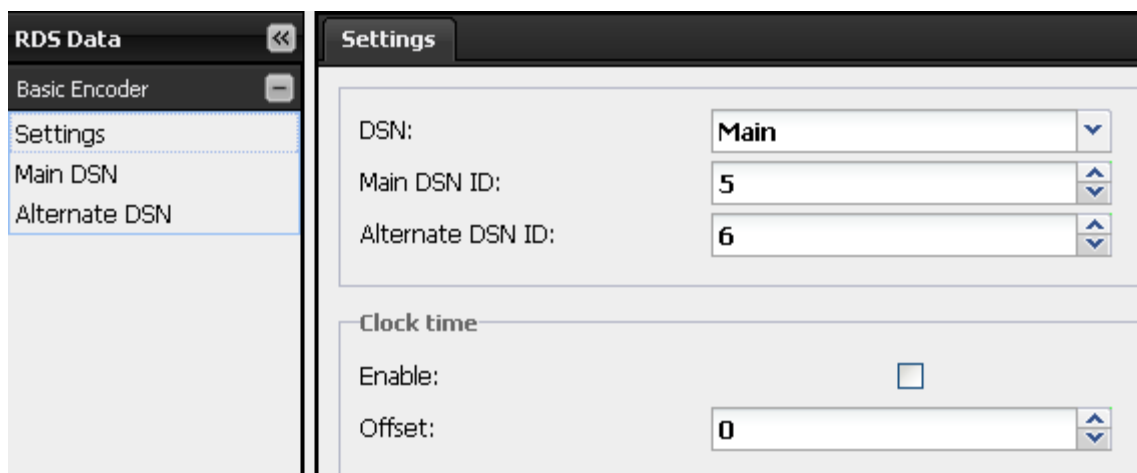
9.5.1. Basic encoder

i This page is available when the Basic RDS option is enabled.

Please refer to parameter descriptions section 5.13 for more details.

Paramètres

Enter the ID of the main and the alternate DSN.



The screenshot shows the 'RDS Data' settings interface. On the left is a sidebar menu with 'RDS Data' at the top, followed by 'Basic Encoder', 'Settings' (highlighted), 'Main DSN', and 'Alternate DSN'. The main content area is titled 'Settings' and contains the following fields:

- DSN:** A dropdown menu currently set to 'Main'.
- Main DSN ID:** A numeric input field containing the value '5'.
- Alternate DSN ID:** A numeric input field containing the value '6'.
- Clock time:** A section containing:
 - Enable:** An unchecked checkbox.
 - Offset:** A numeric input field containing the value '0'.






Check the box 'Clock time' to send the time in the 4A group. Specify an offset if needed.

There is no need to add the 4A group to the group sequence.

Main DSN / Alternate DSN

Set DSN parameters on these pages.

RDS Data	Main DSN
Basic Encoder	
Settings	
Main DSN	
Alternate DSN	

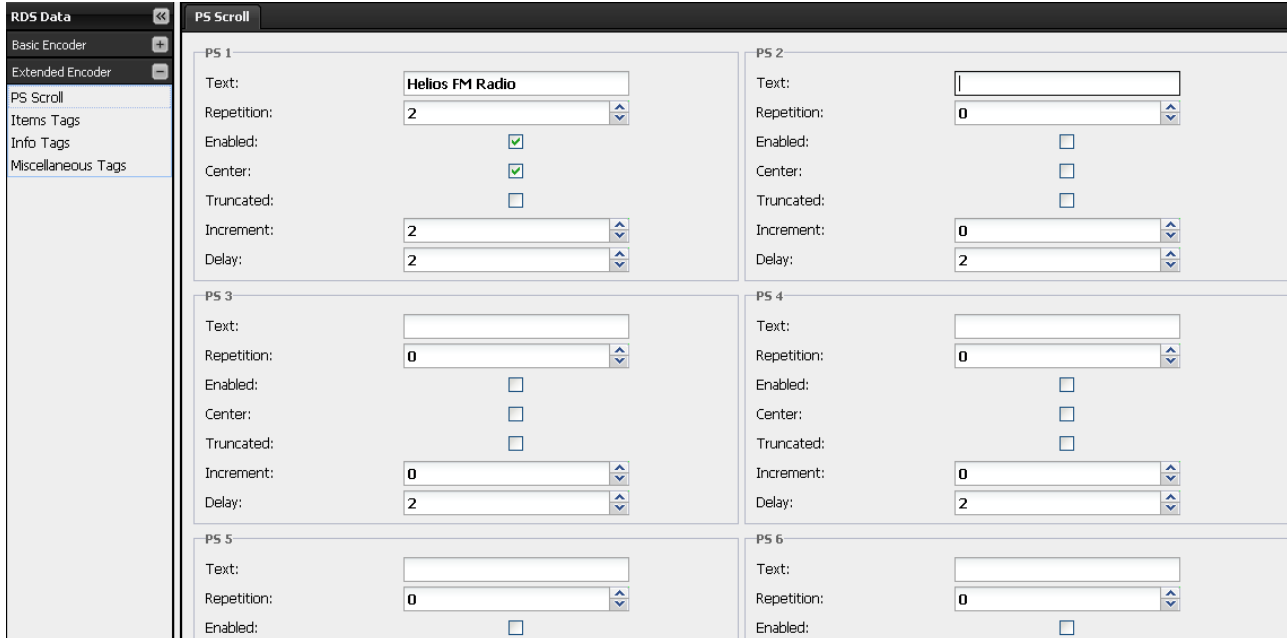
PI:	<input type="text" value="0"/>
PS:	<input type="text"/>
PTY:	<input type="text" value="0"/>  
MS:	<input type="text" value="Speech"/> 
DI:	<input type="text" value="0"/>  
AF List:	<input type="text" value="NO AF"/>
RT:	<input type="text"/>
PTYN:	<input type="text"/>
Group Sequence:	<input type="text" value="NO GS"/>
TA:	<input type="checkbox"/>
TP:	<input type="checkbox"/>

9.5.2. Advanced Encoder

The advanced encoder can be set using serial commands (see section 7.2.8) or the web interface but not with the front panel.

PS Scroll

Set the PS scroll on this page.



PS Line	Text	Repetition	Enabled	Center	Truncated	Increment	Delay
PS 1	Helios FM Radio	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	2
PS 2		0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	2
PS 3		0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	2
PS 4		0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	2
PS 5		0	<input type="checkbox"/>				
PS 6		0	<input type="checkbox"/>				

For each line of PS text, set:

- **Text:** Text may include dynamic data (<ITEM....>, <INFO...>...) that will only be sent if filled in, and for ITEM type fields if the validity time frame is correct.
- **Repetition:** Then encoder will repeat the line before sending the next one (max: 99 times).
- **Enabled:** Check the box for the line to be sent.
- **Center:** When scrolling is done word by word, the encoder may center each word in the receiver screen. Only applicable when 'Word' is the chosen increment
- **Truncated:** Set the number of scrolling characters. Scrolling may be done by word. In that case, the encoder will detect whole words (identifiable delimiters are: ' ', '-', ','), and fit as many whole words as possible on each screen.
- **Increment:** When scrolling is done word by word, the encoder truncates words longer than the display screen (longer than 8 characters). Only applicable when 'Word' is the chosen increment.
- **Delay:** Time laps between 2 consecutive screens.

TAG pages

RDS Data		Items Tags	
Basic Encoder	+		
Extended Encoder	-		
PS Scroll			
Items Tags			
Info Tags			
Miscellaneous Tags			
		Items	Definition
Title:	<input type="text"/>	Title:	<input type="text" value="SONGTITLE"/>
Album:	<input type="text"/>	Album:	<input type="text" value="ALBUMNAME"/>
Track Number:	<input type="text"/>	Track Number:	<input type="text" value="TRACKNUMBER"/>
Artist:	<input type="text"/>	Artist:	<input type="text" value="ARTISTNAME"/>
Composition:	<input type="text"/>	Composition:	<input type="text" value="COMPOSITION"/>
Movement:	<input type="text"/>	Movement:	<input type="text" value="MOVEMENT"/>
Conductor:	<input type="text"/>	Conductor:	<input type="text" value="CONDUCTOR"/>
Composer:	<input type="text"/>	Composer:	<input type="text" value="COMPOSER"/>
Band:	<input type="text"/>	Band:	<input type="text" value="BAND"/>
Comment:	<input type="text"/>	Comment:	<input type="text" value="COMMENT"/>
Genre:	<input type="text"/>	Genre:	<input type="text" value="GENRE"/>
Duration:	<input type="text" value="0"/>		

Dynamic fields presented on the 'Items Tags', 'Info Tags' and 'Miscellaneous Tags' pages display current data in the left column and automation command definitions in the right column. Definitions should be configured to match commands of the automation software application.



-  *Each name must be unique.*
-  *Automation commands are case sensitive.*

Table of definition of commands

Category	RTplus classes	MP3 id3v2		Description
Item	ITEM.TITLE	TIT2	TITLE	Title of item
	ITEM.ALBUM	TALB	ALBUM	The collection name to which this track belongs
	ITEM.TRACKNUMBER	TRCK	TRACKNUM	Number of the current part of the current level
	ITEM.ARTIST	TPE1	ARTIST	A person or band/collective generally considered responsible for the work
	ITEM.COMPOSITION			A complete composition (mainly used in classical music)
	ITEM.MOVEMENT			A movement is a large division of a larger composition or musical form
	ITEM.CONDUCTOR	TPE3	CONDUCTOR	The artist(s) who performed the work. In classical music this would be the conductor, soloists
	ITEM.COMPOSER	TCOM	COMPOSER	Name of the original composer
	ITEM.BAND	TPE2	BAND	Band / orchestra / accompaniment / musician
	ITEM.COMMENT	COMM	COMMENT	Any comment related to the content
	ITEM.GENRE	TCON	CONTENTTYPE	The main genre of the audio or video; e.g. "classical", "ambient-house", "synthpop", "sci-fi", "drama", etc.
Info	INFO.NEWS			Headline
	INFO.NEWS.LOCAL			Local news.
	INFO.STOCKMARKET			Quote information
	INFO.SPORT			Result of a game, either as one tag "Bayern München : Borussia 5:5" or as 2 distinct tags
	INFO.LOTTERY			Lottery
	INFO.HOROSCOPE			Horoscope
	INFO.DAILY_DIVERSION			Daily tip / diversion / joke ...
	INFO.HEALTH			Information about health: Allergy alarms ...
	INFO.EVENT			Info about an event
	INFO.SZENE			Information about scene (Hot locations to be, ...)
	INFO.CINEMA			Information about movies in cinema
	INFO.TV			Information about TV-movies
	INFO.DATE_TIME			Information about date and time (Client to chose between date and time)
	INFO.WEATHER			Information about weather
	INFO.ALARM			An alarm information, typically an official alarm send out while the alarm flag is set
	INFO.ADVERTISEMENT			Info about an advertisement. May be in parallel to an audio advertisements
	INFO.OTHER			Other Information: Not especially specified
Program	STATIONNAME.LONG			Name describing the radio station
	PROGRAM.NOW			EPG info program now
	PROGRAM.NEXT			EPG info program next
	PROGRAM.PART			Part of the current radio show: E.g. one of several parts of the PROGRAM.NOW
	PROGRAM.HOST			Name of the host of the radio show
	PROGRAM.EDITORIAL_STAFF			
	PROGRAM.RADIO			Information about radio shows: A link towards another frequency with other content (NOT AF list) May be one tag (keyword##frequency) or two distinctive tags

Category	RTplus classes	MP3 id3v2		Description
Interactivity	PROGRAM.HOMEPAGE	WORS	WWW.RADIOPAGE	Link to radio station homepage
	PHONE.HOTLINE			The telephone number of the radio stations hotline
	PHONE.STUDIO			The telephone number of the radio stations studio
	PHONE.OTHER			Name and telephone number: Either as one tag ("keyword##phone number") or as two distinct tags
	SMS.STUDIO			The sms number of the radio stations studio (to send directly a sms into the studio)
	SMS.OTHER			Name and sms number: Either as one tag ("keyword##sms number") or as two distinct tags
	EMAIL.HOTLINE			The email address of the radio stations hotline
	EMAIL.STUDIO			The email address of the radio stations studio
	EMAIL.OTHER			Name and email address: Either as one tag ("keyword##phone number") or as two distinct tags
	MMS.OTHER			Name and mms number: Either as one tag ("keyword##mms number") or as two distinct tags
	CHAT			chat content: send by users to a specific address and broadcasted by the Radio Station
	CHAT.CENTER			Address, where contributions to the chat shall be sent (may be url or sms)
	VOTE.QUESTION			A question (typically binary) which can be answered by "yes" or "no" or "1" or "2"
Descriptor	VOTE.CENTER			url or sms number to send your answer to
	PLACE			Descriptor will always be the second RT tag in a message. And will describe the RT tag 1 in more detail
	APPOINTMENT			Adds info about date and time
	HOTLINE			Hotline number to call to get more info
	IDENTIFIER	TSRC	ISRC	Can identify any tag in RT1. For music it is the: International Standard Recording Code (http://www.ifpi.org/isrc/)
	PURCHASE	WPAY	WWWPAYMENT	Address where item can be purchased. Address can be an url or a sms-number
	GET_DATA			Retrieves either via a sms or url-link more data about tag in RT1. (Info request via Point to Point - unicast)

9.6. Audio backup configuration

i The Audio backup can only be configured when the audio backup license is enabled on the transmitter.

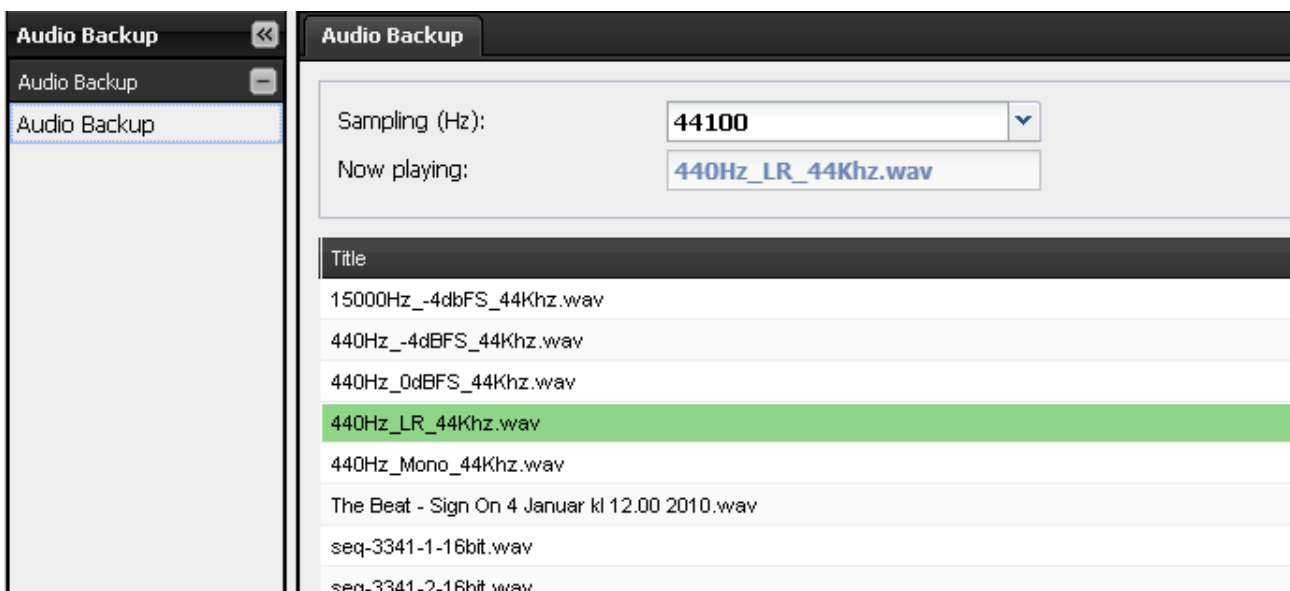
To use the audio backup, copy up to 20 audio files in .wav or .mp3 format at the root of a microSD card and insert the card in the rear panel of the Helios FM card reader.

The reader is located on the TCP/IP board



Click then the button to access the audio backup configuration page.

i If the transmitter is in local mode (orange indicator at the bottom of the page), you will not be able to modify settings.



The page displays files available on the microSD card.

Select the sampling rate according to the desired audio file. If the selected rate is different from the audio file rate, the audio backup will work but will not be optimized.

To select a file in the list, double-click on its name, the line will then turn blue. Double-click again if you wish to unselect it.



Click then the button to lock in your choice; the line will turn green.

An audio file is now associated with the backup feature and can be set and selected like other audio inputs; it is referred as *Player* (see sections 9.4.4 and 9.4.5).

9.7. System configuration



9.7.1. Product ID

System
Product ID
Configuration
Backup
Date
Network

Product ID	
Product Name:	FM Transmitter
Product Description:	FM Transmitter
Location:	
Contact:	
Transmitter Description:	Transmitter 100W
Type:	H01
Power capability (W):	100
Available power (W):	110
Serial Number:	00000025
Uptime:	46
Calibration Date:	05112012
Hardware Version:	01
Software Version:	0117
Software List:	CPU:0116;EXC:227;FPGA:060; DSP:0242
Option List:	GPIO_STD,IP,MPX_IN,RDS_BA SIC,AUDIO_BACKUP,AUDIO_IN PUT,FM_LIMITER

General information regarding the product: name, serial number, versions...

Use the product name and product description to adequately and uniquely describe your unit. They are useful in a network environment to identify it.

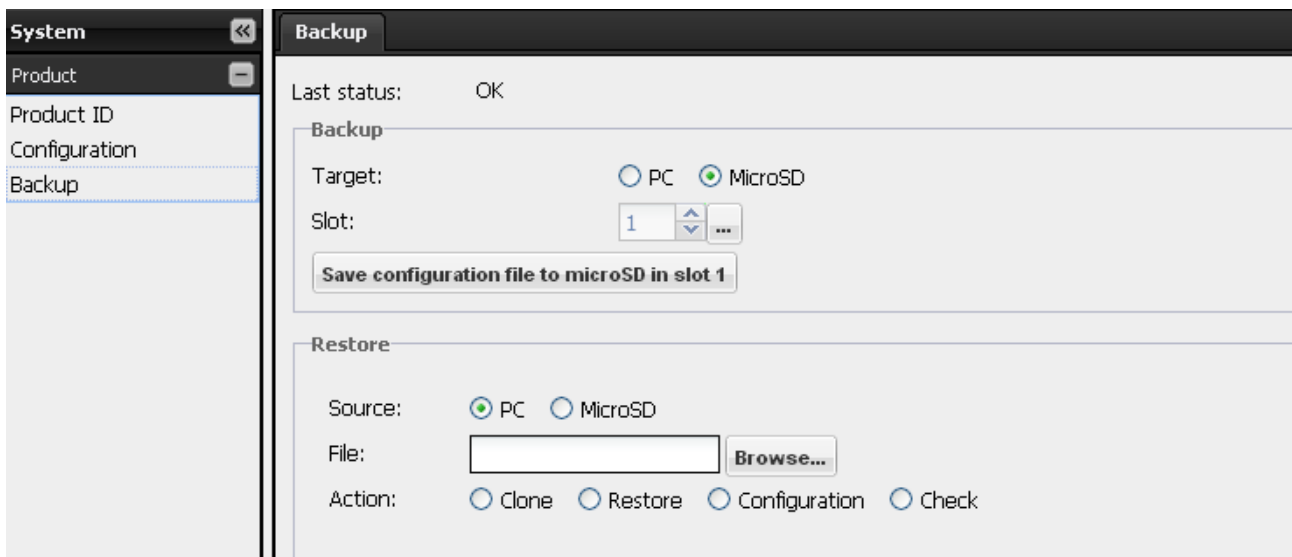
Specifically, these values are sent with SNMP traps.

9.7.2. Product configuration



Set the reflected power protection criticality and the unit display mode (absolute or relative).

9.7.3. Product Backup

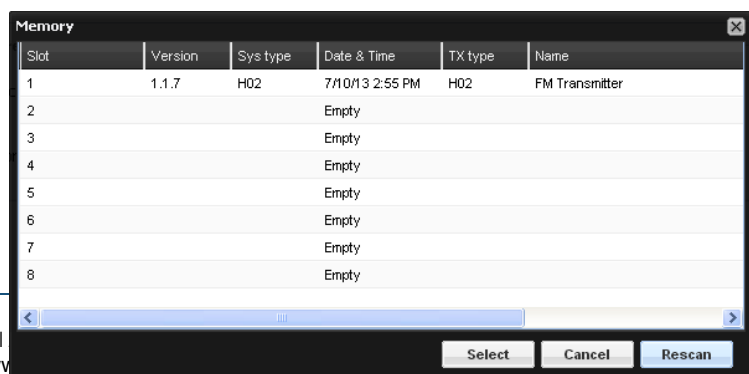


Backing up the transmitter configuration:

Select the media on which to back up.

On the PC, the backup file is saved on the web browser download directory. Its name is: `FmNgIP_version_serial-number_date_time`.

On the μ SD card, click “Rescan” to display the content of the card and select the slot. Up to 8 configurations can be used for presets (see section 9.4.2).



Slot	Version	Sys type	Date & Time	TX type	Name
1	1.1.7	H02	7/10/13 2:55 PM	H02	FM Transmitter
2			Empty		
3			Empty		
4			Empty		
5			Empty		
6			Empty		
7			Empty		
8			Empty		

Restoring the transmitter configuration:

If the backup file is on the PC, browse to select it.

If the backup file is on the μ SD card, click “Rescan” to display the content of the card and select its slot.

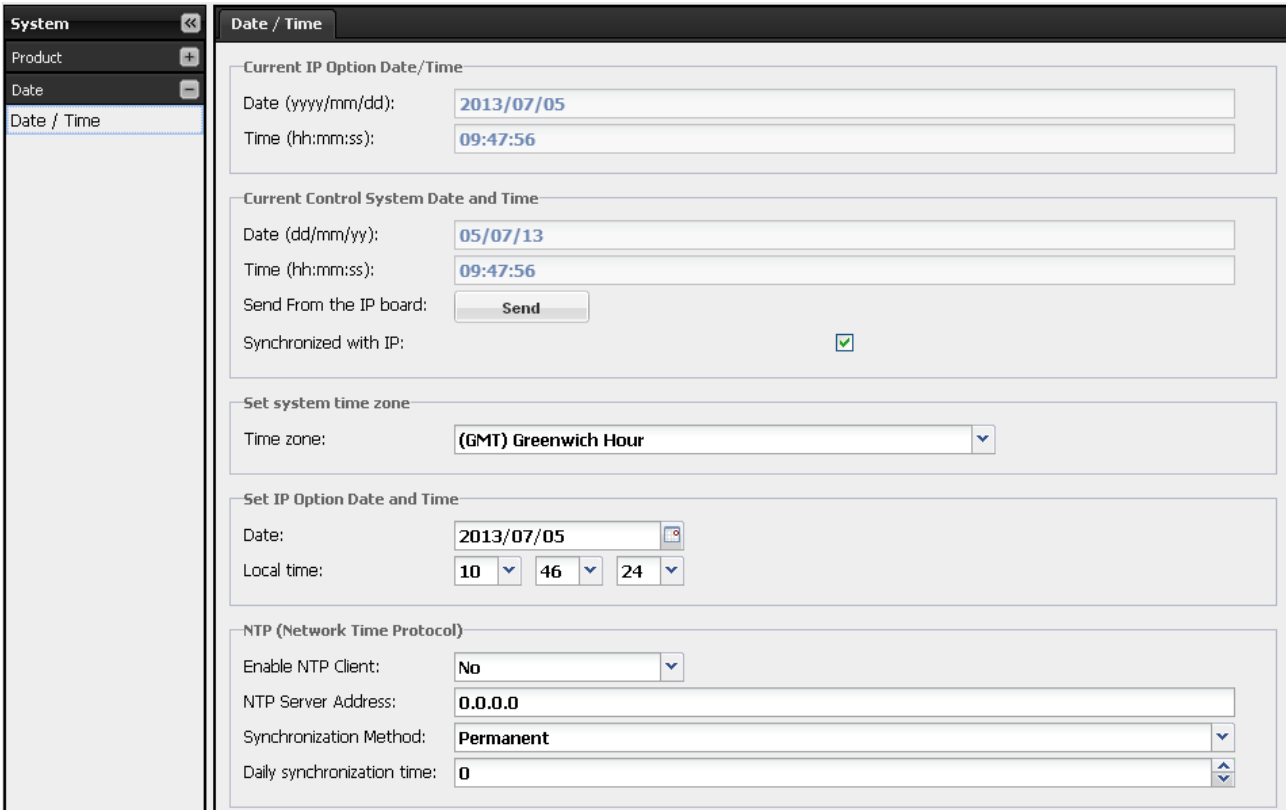
You may then choose to:

- Clone: the whole configuration embedded in the unit is restored, except the EMR configuration. It can be used to restore a unit after it has been serviced.
- Restore: the whole configuration embedded in the unit is restored, except the EMR configuration and the network configuration. It can be used to set two transmitters identically.
- Configure: the transmitter configuration is restored, ie, RF configuration, input configuration, RDS configuration and presets.
- Check (only available on PC): no restoration, but the main backed up parameters are checked (1) and can be compared to parameters saved with the 8 memories (2) .

Slot	Version	Sys type	Date & Time	TX type	Name	Serial	Frequency	Power
Check	1.1.7	H02	7/10/13 5:18 PM	H02	1 FM Transmitter	00000011	99 MHz	3 W
1	1.1.7	H02	7/10/13 2:55 PM	H02	2 FM Transmitter	00000011	99 MHz	3 W
2	1.1.7	H02	7/3/13 2:51 PM	H02	FM Transmitter	00000011	99 MHz	3 W
3	1.1.7	H02	7/1/13 3:52 PM	H02	FM Transmitter	00000011	98 MHz	0 W
4	1.1.7	H02	7/2/13 11:06 AM	H02	FM Transmitter	00000011	98 MHz	0 W
5	1.1.7	H02	7/2/13 2:02 PM	H02	FM Transmitter	00000011	98 MHz	0 W
6	1.1.7	H02	7/3/13 2:43 PM	H02	FM Transmitter	00000011	98.1 MHz	4 W
7			Empty					
8	1.1.7	H02	7/4/13 2:05 PM	H02	FM Transmitter	00000011	99 MHz	3 W

Cancel Rescan

9.7.4. Date / Time



A couple of Helios FM internal components are fitted with a clock. This page allows you to make sure they are synchronized. The IP board clock can be set on this page: it can manage time zones and will be used as reference for the system clock which cannot manage time zone and which is used for RDS.

➤ **Set system time zone:**

The user selects the geographical zone from the list. Important to have this set correctly when using an NTP server.

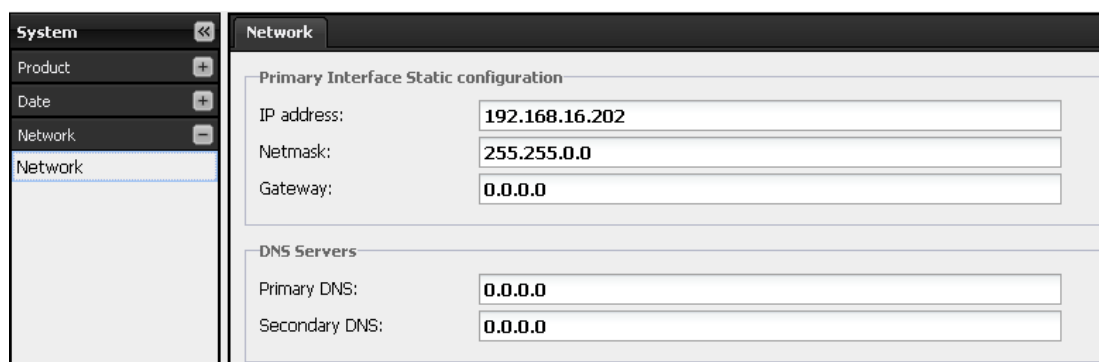
➤ **Set system date:** the user may update both date (year/month/day) and time (hour/minute/second).

➤ **Network Time Protocol: NTP update**

The user can enter a time server address to update the equipment's internal clock automatically. Make sure this address can be reached by the unit; specifically, the gateway must be properly set. Specify whether it should be synchronized continuously or periodically. For periodic synchronization, indicate what time the daily synchronization should occur (between 0 and 23).

i *Set the time zone first! Changes in the time zone affect the time that is displayed in the system time window, so setting the zone first will eliminate the need to set the system time twice!*

9.7.5. Network



The screenshot shows the 'Network' configuration page. On the left is a sidebar with a tree view containing 'System', 'Product', 'Date', 'Network', and 'Network' (selected). The main area is titled 'Network' and contains two sections: 'Primary Interface Static configuration' and 'DNS Servers'. The 'Primary Interface Static configuration' section has three input fields: 'IP address:' with value '192.168.16.202', 'Netmask:' with value '255.255.0.0', and 'Gateway:' with value '0.0.0.0'. The 'DNS Servers' section has two input fields: 'Primary DNS:' with value '0.0.0.0' and 'Secondary DNS:' with value '0.0.0.0'.

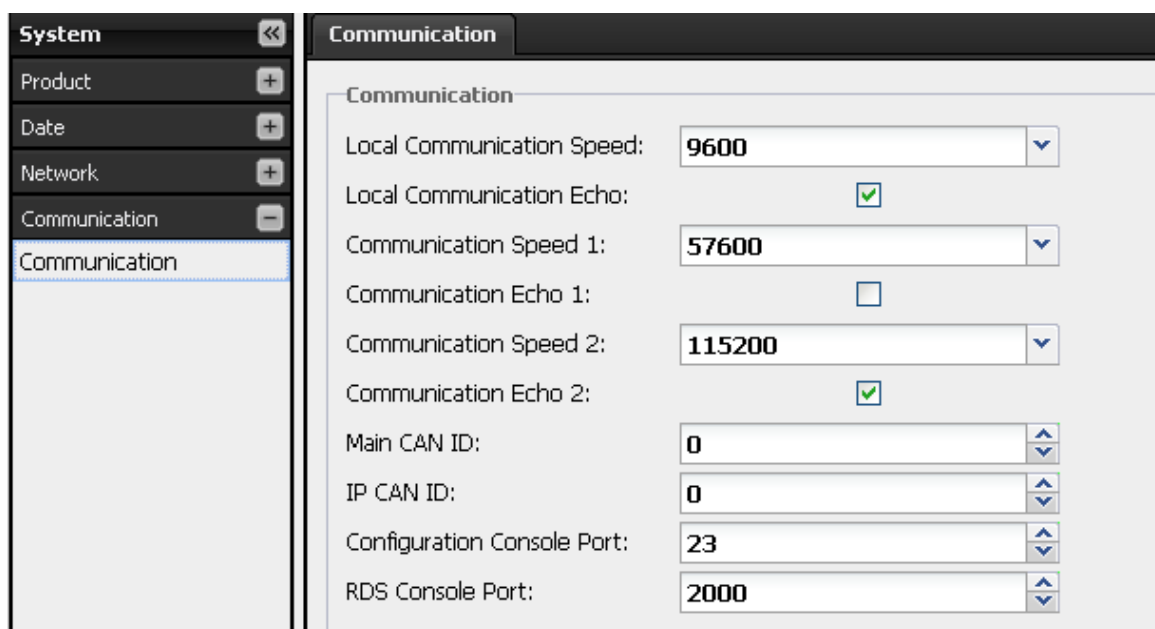
IP Configuration:

➤ Static Ethernet configuration

Set the parameters for the network interface.

- ##### ➤ DNS Servers:
- DNS configuration. Mandatory if before using DNS addresses on other configuration pages.

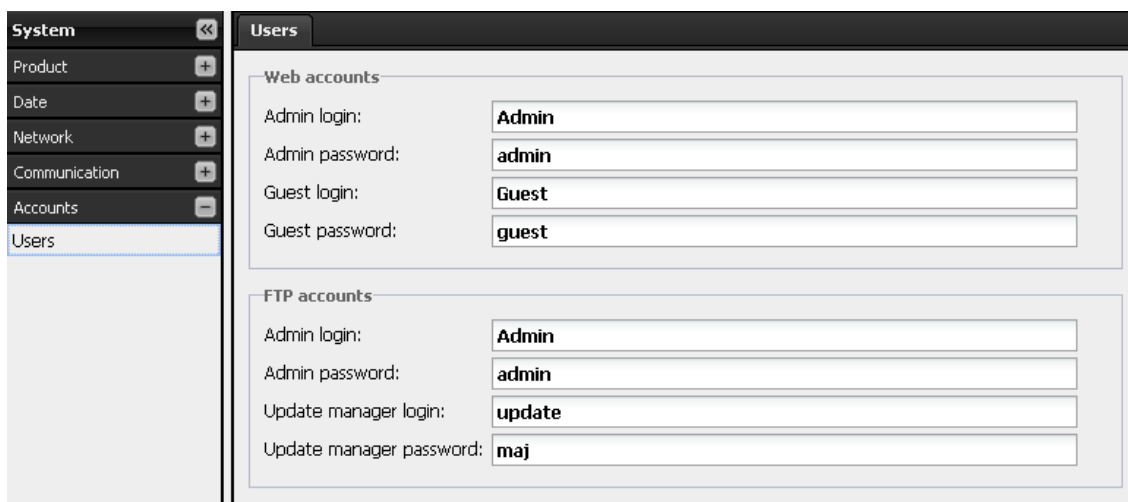
9.7.6. Communication



The screenshot shows the 'Communication' configuration page. On the left is a sidebar with a tree view containing 'System', 'Product', 'Date', 'Network', 'Communication', and 'Communication' (selected). The main area is titled 'Communication' and contains several configuration fields: 'Local Communication Speed:' with a dropdown set to '9600', 'Local Communication Echo:' with a checked checkbox, 'Communication Speed 1:' with a dropdown set to '57600', 'Communication Echo 1:' with an unchecked checkbox, 'Communication Speed 2:' with a dropdown set to '115200', 'Communication Echo 2:' with a checked checkbox, 'Main CAN ID:' with a numeric input set to '0', 'IP CAN ID:' with a numeric input set to '0', 'Configuration Console Port:' with a numeric input set to '23', and 'RDS Console Port:' with a numeric input set to '2000'.

Parameters of the communication board.

9.7.7. Users



System	
Product	+
Date	+
Network	+
Communication	+
Accounts	-
Users	

Users

Web accounts

Admin login:	Admin
Admin password:	admin
Guest login:	Guest
Guest password:	guest

FTP accounts

Admin login:	Admin
Admin password:	admin
Update manager login:	update
Update manager password:	maj



This is where web site connection settings can be modified. This page is only visible to administrators.

Two web and software accounts are available:

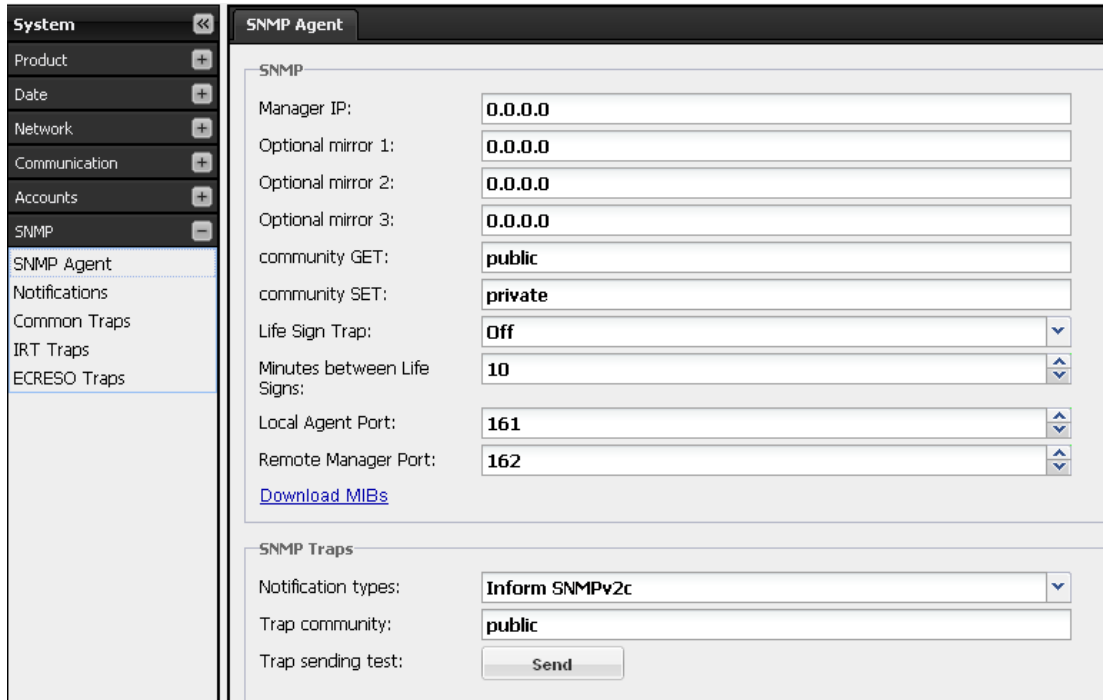
- Administrator (Admin / admin by default). The administrator has full rights
- Guest (Guest / guest by default). The guest has read-only access to all pages except the user management page. The guest can download logs.

Two FTP accounts are available:

- Administrator (Admin / admin by default). The administrator has full rights
- Update manager (update / maj by default). This account is only used for software updates.

-  You may change login names but make sure each is unique!
-  Only use alphanumerical characters for user names and passwords.

9.7.8. SNMP Agent



➤ SNMP configuration

The equipment enables multiple addresses to be configured for SNMP notifications. However, only the Main Manager has the authority to acknowledge notifications. With “INFORMS” messages, automatic answers from secondary managers are ignored by the unit.

➤ **MIB:** to download the MIB right click on the link and select “Save link as”

➤ SNMP Traps configuration

- SNMP Notification Type / Trap Community / System Description: trap settings
- Life Sign Trap / Minutes between Life Signs: sends life signs every X minutes. This trap makes it possible to check that the unit is connected to the network.

➤ **Trap sending test:** enables the user to carry out a test according to the trap settings.

9.7.8.1 Supported SNMP versions

The unit implements an SNMP agent conforming to SNMPv1 and SNMPv2c versions. GET and SET commands are supported, as well as GETBULK in SNMPv2c. Notifications can be transmitted in TRAP V1 or V2c form or with an INFORM V2c type.

9.7.8.2 Notification mode

To make sure traps are received by the main recipient, the unit offers 2 methods. With both methods, traps are sent until they are acknowledged.

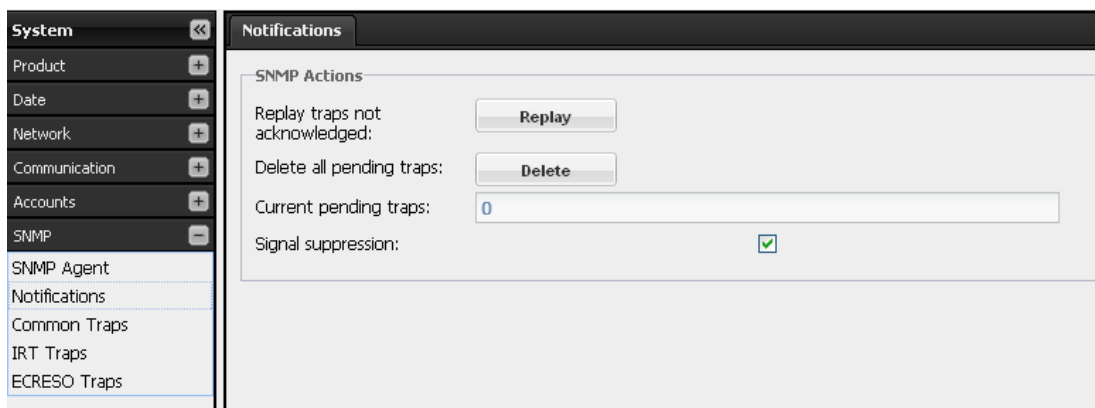
- **Automatic acknowledgement** for sending with INFORM. These notifications are only available with the version 2c of the protocol. This protocol checks that the manager sends the notification to the transmitter. This process is simple and reliable, no specific configuration is required for the manager.
- **Manual acknowledgement** for Traps V1 and Traps V2c. A specific OID (“alarmPendingAlarmsalarmAck”) is extracted and its variables are sent with the trap. The

manager must then execute a SET command. This method is more complex but is the only one that can work with the version 1 of the protocol.

The acknowledgment mode (Trap V1, Trap V2c or Inform) is identical for all alarms. See the next section “**Notifications**” for additional settings.

- i** With “SNMPv2c traps” notifications, it not possible to acknowledge traps. In the same way, traps which do not require acknowledgment cannot be sent with the “Inform SNMPv2c” format, even when this format is selected. This is the case with the ‘test’ trap as well as with equipment information traps such as the ‘Equipment On’ trap.

9.7.9. Notifications



➤ SNMP Actions

The user may replay traps that have not been acknowledged yet.

The user may also delete pending traps that have not been acknowledged yet.

Signal suppression in local mode:

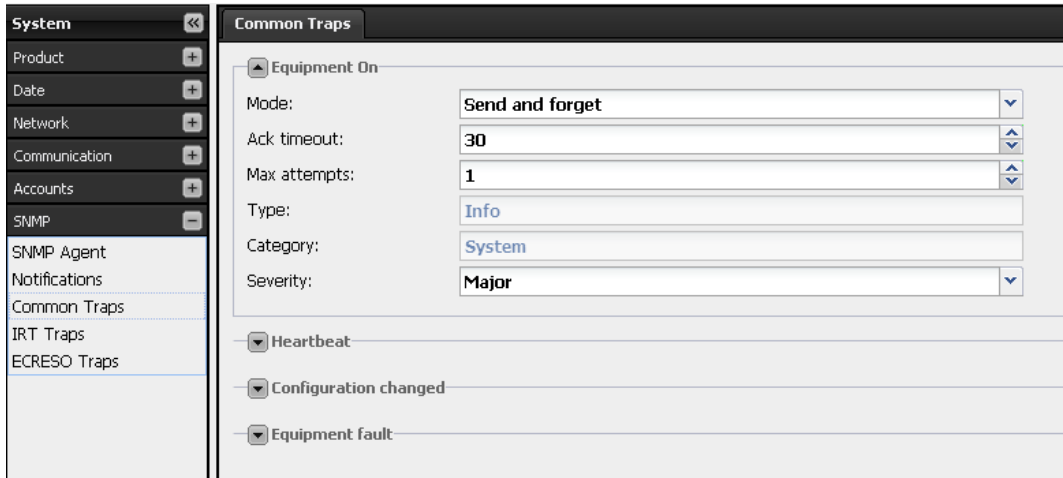
- If the box is checked, as soon as the transmitter is in local mode, SNMP GET return the value undefined and SNMP traps are no longer sent. SNMP traps start being sent again when the transmitter is no longer in local mode.

It is useful to prevent generating traps while in maintenance.

- If the box is not checked, SNMP GET return the current value and traps are sent even in local mode.

- i** If the transmitter is part of an N+1 system with Nephtys, this mode must be disabled to ensure the system will work properly.

9.7.10. Common traps



Click the arrow next to the trap name to display its parameters.

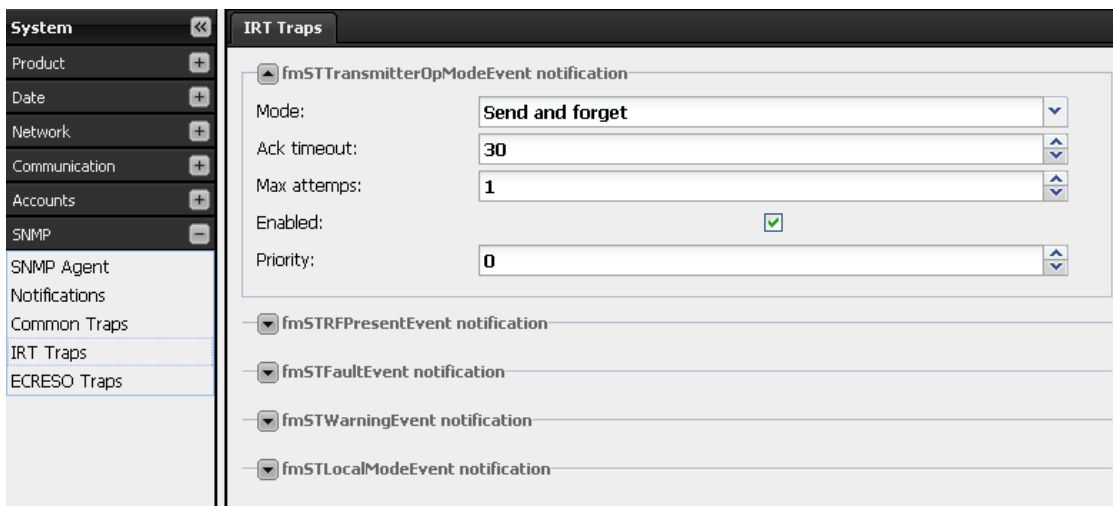
Set the mode:

- Resend until acknowledgement: the trap is regularly sent until acknowledgement.
- Send and forget: the trap is sent once, no follow-up is expected.
- Do not send

If "Resend until acknowledgement" is selected, set the time to wait for acknowledgement before resending the trap (Ack timeout, in seconds) and the maximum number of times the trap will be resent (Max retries).

Set also the severity (log, minor, critical...).

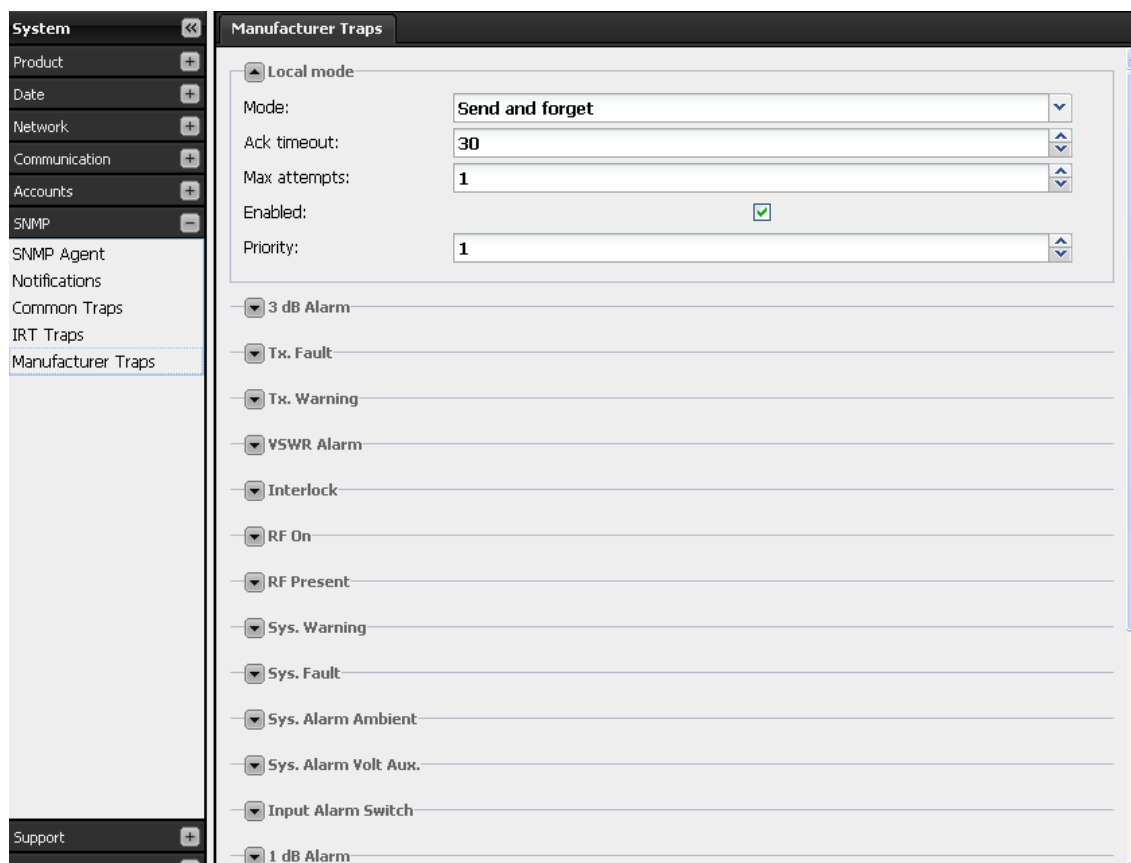
9.7.11. IRT Traps



IRT traps are configured like common traps (see previous section), with 2 additional parameters:

- To enable the trap, check "Enabled" (replaces the "Do not send option" of the Common traps)
- Set the priority; this information which is sent with the traps can be used by an SNMP Manager as filter criteria for instance.


9.7.12. Manufacturer Traps



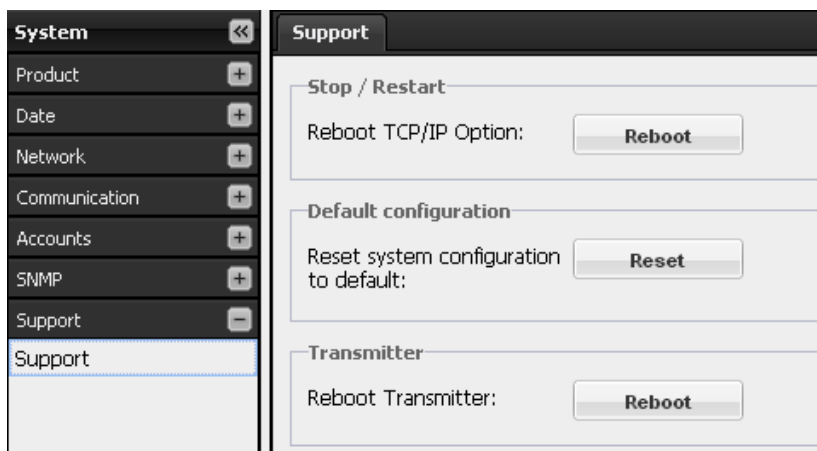
The screenshot shows the 'Manufacturer Traps' configuration window. On the left is a sidebar with a tree view containing 'System', 'Product', 'Date', 'Network', 'Communication', 'Accounts', 'SNMP', 'SNMP Agent', 'Notifications', 'Common Traps', 'IRT Traps', 'Manufacturer Traps' (selected), 'Support', and 'EMP'. The main area is titled 'Manufacturer Traps' and contains the following settings:

- Local mode** (expanded):
 - Mode:
 - Ack timeout:
 - Max attempts:
 - Enabled: ☒
 - Priority:
- ☒ 3 dB Alarm
- ☒ Tx. Fault
- ☒ Tx. Warning
- ☒ VSWR Alarm
- ☒ Interlock
- ☒ RF On
- ☒ RF Present
- ☒ Sys. Warning
- ☒ Sys. Fault
- ☒ Sys. Alarm Ambient
- ☒ Sys. Alarm Volt Aux.
- ☒ Input Alarm Switch
- ☒ 1 dB Alarm

Manufacturer traps are configured like IRT traps (see previous section).

 *No trap is sent on automatic audio switch.*

9.7.13. Support



The screenshot shows the 'Support' configuration window. On the left is a sidebar with a tree view containing 'System', 'Product', 'Date', 'Network', 'Communication', 'Accounts', 'SNMP', 'Support' (selected), and 'EMP'. The main area is titled 'Support' and contains the following sections:

- Stop / Restart**:
 - Reboot TCP/IP Option:
- Default configuration**:
 - Reset system configuration to default:
- Transmitter**:
 - Reboot Transmitter:

With the 'Reboot TCP/IP option' button, restart the TCP/IP board.


With the 'Reset' button, erase your system configuration and reset it to default.

With the 'Reboot Transmitter' button, restart the transmitter's front panel.

9.7.14. EMR

EMR (Expert Maintenance Reporting) is a service offered by your Egreso dealer to monitor your Helios FM transmitters. A report is periodically sent to you to give you the state of the transmitters; this report may suggest corrective or preventive actions to solve potential issues or improve the performance of the transmitters.

If you have subscribed to this service, you will need to set your transmitter so it can communicate with the EMR server.



Enter its position and your EMR account ID as supplied by your dealer.

Check the box to enable EMR.

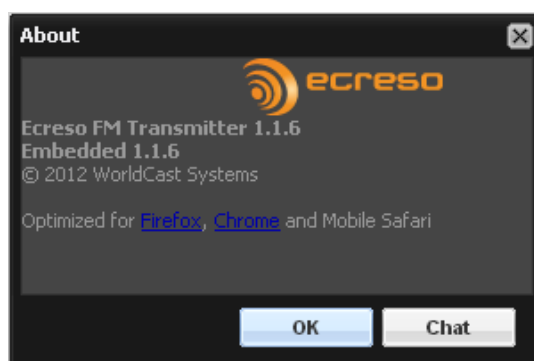
Enter the IP address of the EMR server (or web address) as supplied by your dealer and click the Activate button to establish proper communication between your transmitter and the EMR server.

For more information about using EMR, please see chapter 10.

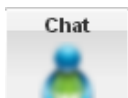
9.8. About

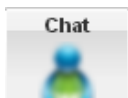
This window displays information regarding the web application

It also gives you access to the chat window (see next section).



9.9. Chatting with other users



The  icon allows connected users to chat. When you click on it, the Chat box opens.

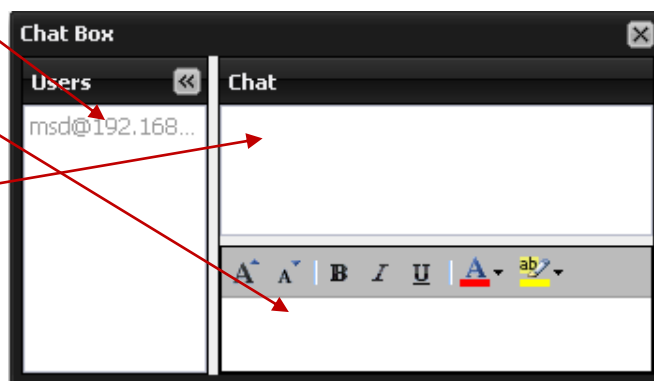
Users are identified by their screen name and their PC IP address.

Simply type your message which can be formatted and press the keyboard Enter key to send it. Press Shift+Enter to start a new line.

Messages written by other users are visible in the top right panel.

This box can stay open without preventing access to the site's main functions.

If the window is closed and then reopened, the previous messages remain available.



10. REMOTE CONTROL AND MONITORING WITH THE GPIO BOARD

10.1. Introduction

This function is available when the optional standard or analog GPIO board is installed on the transmitter.

It provides an interface between ECRESO transmitters and external systems. The modules are remotely controlled via “RC” inputs using opto isolators. Working state and alarms are sent to “RM” outputs via relays, or “RM ANA” analog outputs on the analog board.

10.2. Standard GPIO board

10.2.1. Description of control and monitoring functions

Control commands work when an impulsion longer than 100 ms is sent to the corresponding input.

There are eight control functions:

- Power on: turns on the transmitter
- Power off: turns off the transmitter
- RF on: enables the RF
- RF off: disables the RF
- TA on: enables the TA (basic RDS)
- TA off: disables the TA (basic RDS)
- DSN main: enables the main DSN (basic RDS)
- DSN alt: enables the alternative DSN (basic RDS)

Control commands can also be used to trigger presets. See section 9.4.2 for more details.

Outputs are relays that include a normally closed or normally open contact. When an event occurs in the unit, the corresponding relay is activated.

Seven monitoring functions are associated with relays:

- Local: indicates if the unit is in local mode
- Fault: indicates a transmitter fault
- Warning: indicates an alarm linked to the internal working of the transmitter (temperature, voltage...)
- RF: indicates if the RF is enabled
- On: indicates if the transmitter is not in standby mode
- Off: indicates if the transmitter is in standby mode
- VSWR: indicates if there is a VSWR error

10.2.2. Remote control function pinout

Function	Remote Control	Input name	Common
POWER ON / PRESET 1*	RC1	OPT1A(20)	RC_COMMUN(24)
POWER OFF / PRESET 2*	RC2	OPT2A(8)	RC_COMMUN(24)
RF ON / PRESET 3*	RC3	CONF1(21)	RC_COMMUN(24)
RF OFF / PRESET 4*	RC4	CONF2(9)	RC_COMMUN(24)
TA ON / PRESET 5 or 1*	RC5	CONF3(22)	RC_COMMUN(24)
TA OFF / PRESET 6 or 2*	RC6	CONF4(10)	RC_COMMUN(24)
DSN MAIN / PRESET 7 or 3*	RC7	CONF5(23)	RC_COMMUN(24)
DSN ALT / PRESET 8 or 4*	RC8	CONF6(11)	RC_COMMUN(24)

Numbers in parenthesis indicated the pin number on the DB25 connector.

* The GPIO board can be used to manage presets. See section 9.4.2 for more details.

10.2.3. Remote monitoring function pinout

Event	Remote Monitoring	Output name	Common
LOCAL	RM1	REL1_RT(1)	REL1_C(14)
FAULT	RM2	REL2_RT(2)	REL2_C(15)
WARNING	RM3	REL3_RT(3)	REL3_C(16)
RF (ON/OFF)	RM4	REL4_RT(4)	REL4_C(17)
ON	RM5	REL5_T(18)	REL5_C(6)
OFF	RM6	REL5_R(5)	REL5_C(6)
VSWR	RM7	REL6_RT(19)	REL6_C(7)

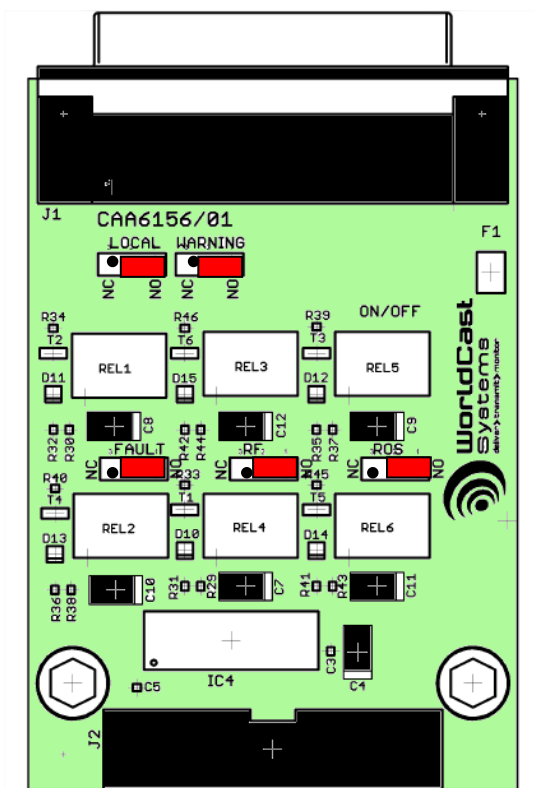
Numbers in parenthesis indicated the pin number on the DB25 connector.

A closed link indicates valid information when configuration is as in the following table.

Default jumper position:

Relay	Positions	Contacts
REL_1RT	JUMP2[1 ;2]	NO
REL2_RT	JUMP3[1 ;2]	NO
REL3_RT	JUMP5[1 ;2]	NO
REL4_RT	JUMP1[1 ;2]	NO
REL6_RT	JUMP4[1 ;2]	NO

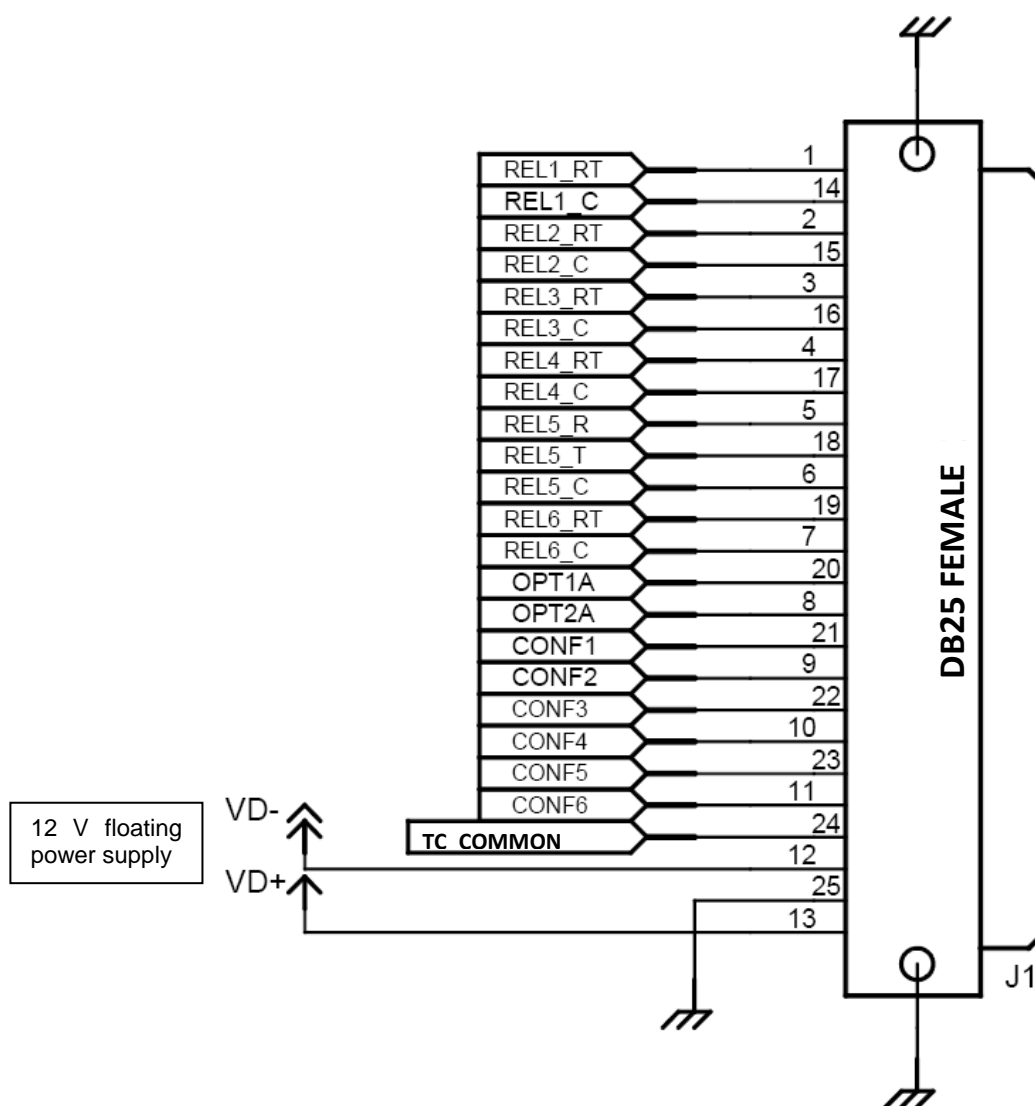
Jumpers from 1 to 5 (JUMP1 to JUMP5): select the NO or NC contact of the relays.



All jumpers are normally open on the GPIO board.

- i** Switching to local mode (relay 1) prevents remote control: it therefore disables all other relays and commands.

10.2.4. Physical representation of the GPIOs



10.2.5. Management using serial commands

A set of commands makes it possible to override the control board to modify specific RC outputs and read specific RM inputs.

To do so, set the RC you want to control (SYS.GPIO.IN.MASK) and the RM you want information from (SYS.GPIO.OUT.MASK).

When these commands are used, the control board cannot monitor nor control them.

NAME	Access (R/W)	Serial port possible value	Comments
SYS.GPIO.IN.ACT	R	XX X=[A..F;0..9]	Indicates the corresponding RC when managed manually (see SYS.GPIO.IN.MASK)
SYS.GPIO.OUT.ACT	R/W	XX X=[A..F;0..9]	Enables the corresponding RM when managed manually (see SYS.GPIO.OUT.MASK)
SYS.GPIO.IN.MASK	R/W	XX X=[A..F;0..9]	Sets the RC control either by the control board or manually. Hexadecimal code: each bit corresponds to an input. Ex: A1 (10100001) indicates the RC 1, 6 and 8 are managed manually
SYS.GPIO.OUT.MASK	R/W	XX X=[A..F;0..9]	Sets the RM control either by the control board or manually. Hexadecimal code: each bit corresponds to an input: Ex: 21 (00100001) indicates RM 1 and 6 are managed manually.

Serial commands used to configure RC/RM

Remote control binary values:

Remote Control	Binary value
RC1	xxxxxxx1
RC2	xxxxxx1x
RC3	xxxxx1xx
RC4	xxxx1xxx
RC5	xxx1xxxx
RC6	xx1xxxxx
RC7	x1xxxxxx
RC8	1xxxxxxx

Remote monitoring binary values:

Remote Monitoring	Binary value
RM1	xxxxxxx1
RM2	xxxxxx1x
RM3	xxxxx1xx
RM4	xxxx1xxx
RM5	xxx1xxxx
RM6	xx1xxxxx
RM7	x1xxxxxx

However, the format of values returned by serial commands is hexadecimal.

You must then convert each 4 digit set as per the following table:

Hexadecimal	Binary
0	0000
1	0001
2	0010
3	0011
4	0100
5	0101
6	0110
7	0111
8	1000
9	1001
A	1010
B	1011
C	1100
D	1101
E	1110
F	1111

Examples:

If the command

```
SYS.GPIO.IN.ACT
```

returns

```
8A
```

You must convert the hexadecimal value in binary, ie 8A=10001010, which indicates that RC 2, 4 and 8 are activated.

To control RM 3 and 5, convert the binary value 00010100: you get 14 as per the above table. You must then send the command:

```
SYS.GPIO.OUT.MASK=14
```

10.3. Analog GPIO board

10.3.1. Description of control and monitoring functions

Its working principle is similar to that of the standard board.

On this board, there are four control functions:

- Power on: turns on the transmitter
- Power off: turns off the transmitter
- RF on: enables the RF
- RF off: disables the RF

Four analog monitoring functions

- Forward power

- Reflected power
- 2 user-defined functions that can monitor one of the following:
 - Ambient temperature
 - Radiator temperature
 - Fan 1 speed (or fan 2)
 - Amplifier voltage
 - Amplifier current
 - Amplifier power

And seven monitoring functions are associated with relays:

- Local: indicates if the unit is in local mode
- Fault: indicates a transmitter fault
- Warning: indicates an alarm linked to the internal working of the transmitter (temperature, voltage...)
- RF: indicates if the RF is enabled
- On: indicates if the transmitter is not in standby mode
- Off: indicates if the transmitter is in standby mode
- VSWR: indicates if there is a VSWR error

10.3.2. Remote control function pinout

Function	Remote Control	Input name	Common
POWER ON / PRESET 1*	RC1	OPT1(20)	RC_COMMUN(24)
POWER OFF / PRESET 2*	RC2	OPT2(8)	RC_COMMUN(24)
RF ON / PRESET 3*	RC3	OPT3(21)	RC_COMMUN(24)
RF OFF / PRESET 4*	RC4	OPT4(9)	RC_COMMUN(24)

Numbers in parenthesis indicated the pin number on the DB25 connector.

* The GPIO board can be used to manage presets. See section 9.4.2 for more details.

10.3.3. Remote analog monitoring function pinout

Event	Remote Monitoring	Output name	Common
FORWARD POWER	RM ANA 1	ANA_OUT_A(11)	GND(25)
REFLECTED POWER	RM ANA 2	ANA_OUT_B(23)	GND(25)
CONFIGURABLE* 1	RM ANA 3	ANA_OUT_C(10)	GND(25)
CONFIGURABLE* 2	RM ANA 4	ANA_OUT_D(22)	GND(25)

Les chiffres entre parenthèse indiquent le numéro de broche sur le connecteur DB25

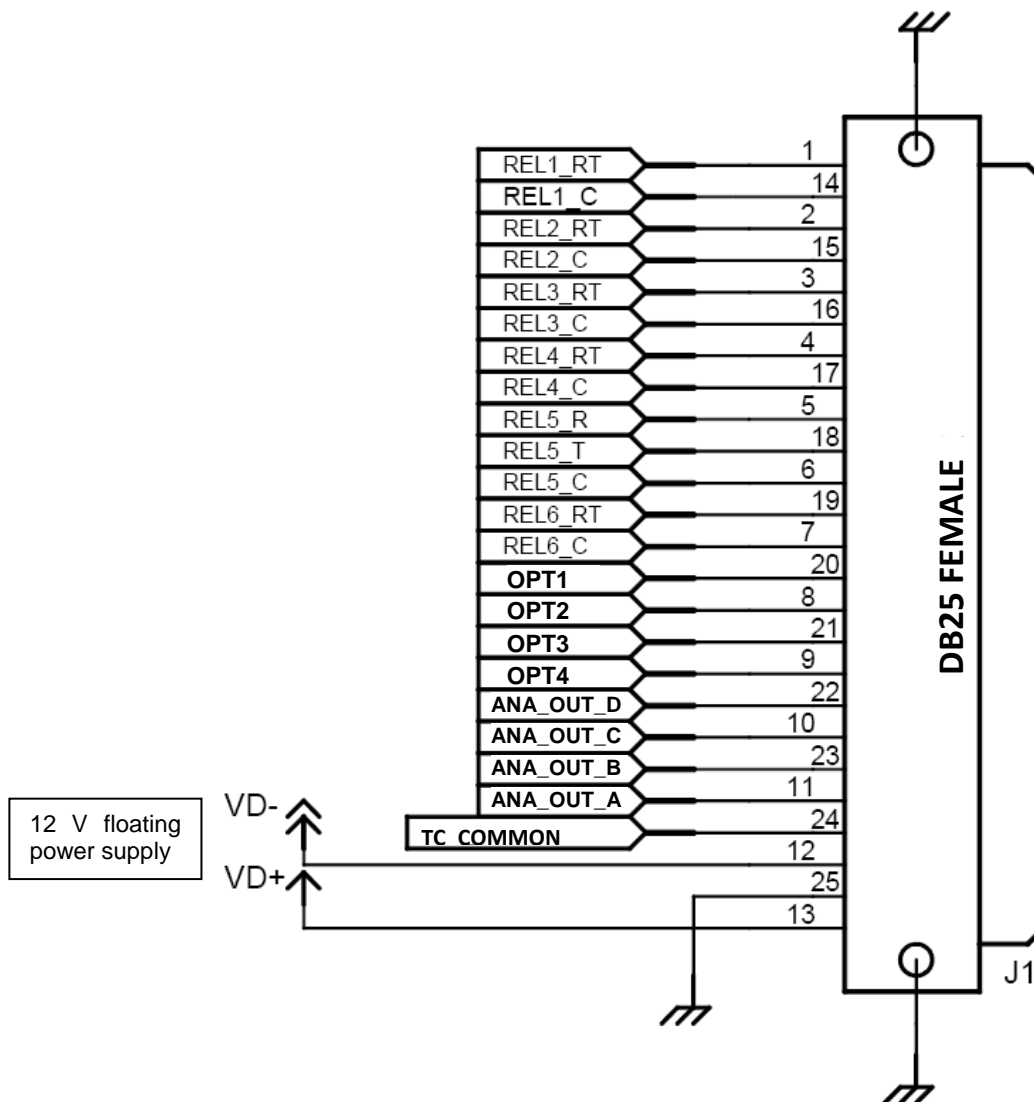
* CONFIGURABLE: T AMB or FAN 1 or V1+V2/2 or HEAT SINK or FAN 2 or I1+I2

10.3.4. Remote monitoring function pinout (relays)

Event	Remote Monitoring	Output name	Common
LOCAL	RM1	REL1_RT(1)	REL1_C(14)
FAULT	RM2	REL2_RT(2)	REL2_C(15)
WARNING	RM3	REL3_RT(3)	REL3_C(16)
RF (ON/OFF)	RM4	REL4_RT(4)	REL4_C(17)
ON	RM5	REL5_T(18)	REL5_C(6)
OFF	RM6	REL5_R(5)	REL5_C(6)
VSWR	RM7	REL6_RT(19)	REL6_C(7)

Numbers in parenthesis indicated the pin number on the DB25 connector.

10.3.5. Physical representation of the analog GPIOs



10.3.6. Management using serial commands

To configure one of the analog functions, simply associate the desired function to one of the configurable outputs:

NAME	Access (R/W)	Serial port possible value	Comments
SYS.GPIO.CONF1	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the remote monitoring ANA3 on the optional GPIO Analog board
SYS.GPIO.CONF2	R/W	"AMB" or "FAN1" or "VOLT" or "HEAT" or "FAN2" or "CURRENT" or "PWR"	Sets the remote monitoring ANA4 on the optional GPIO Analog board

10.3.7. Specification of the analog GPIO board

The values the board can return depend on the power of the module (Helios FM or Goliath FM):

Module power Max Value *	20 W	100 W	350 W	750 W	1000 W	1500 W	2000 W
Forward Power (W)	22	110	385	825	1100	1650	2200
Reflected Power (W)	5	10	50	50	50	100	100
Ambient temperature (°C)	70	70	70	70	70	70	70
Fan speed (rpm)	NA	15000	6000	6000	6000	6000	6000
Voltage 1+Voltage 2 (V)	30	30	30	60	60	60	60
Heat (°C)	80	80	80	80	80	80	80
Intensity 1+ Intensity 2 (A)	5	10	25	25	35	60	70

* The output power is between 0 and +5 V; it varies depending on the measured value. It is at 5 V for the maximum values.

11. EMR - EXPERT MAINTENANCE REPORTING

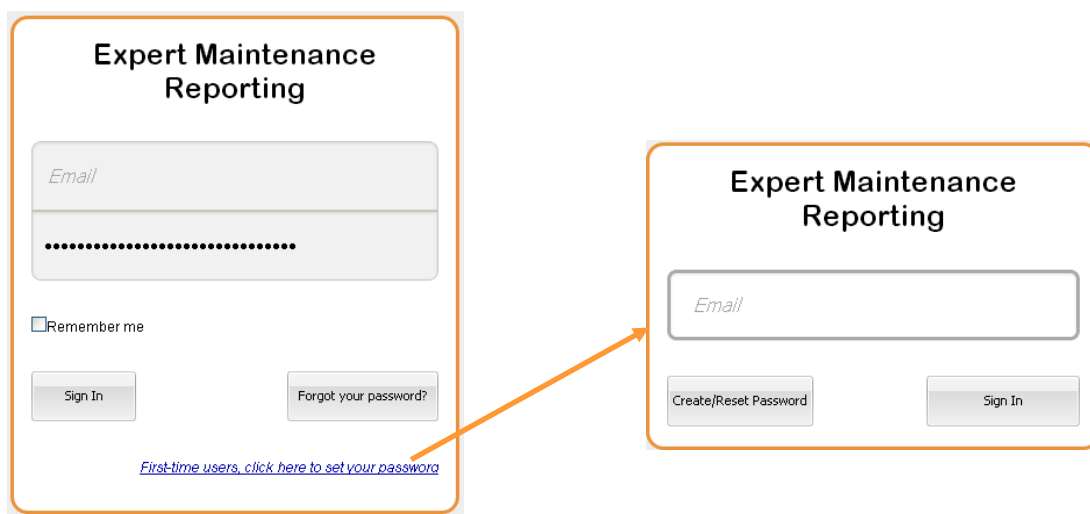
11.1. Setting up

11.1.1. Connecting for the first time to EMR

Open a web browser (Google Chrome, Mozilla Firefox ...) and enter the site address: www.expertmaintenance.net in the address bar.

i Though the web application is compatible with most browsers, performances vary greatly from on browser to another. For this reason, we recommend you use Google Chrome. You may also use Google Chrome Portable available on the Ecreso CD; this version can work without being installed on your PC (it can be on a flash drive).

As a first time user, you will have to set your password before being able to connect.



Click on the “First time user” link.

Enter the email address you provided to WorldCast Systems for your EMR account and click the “Create/Reset Password” button.

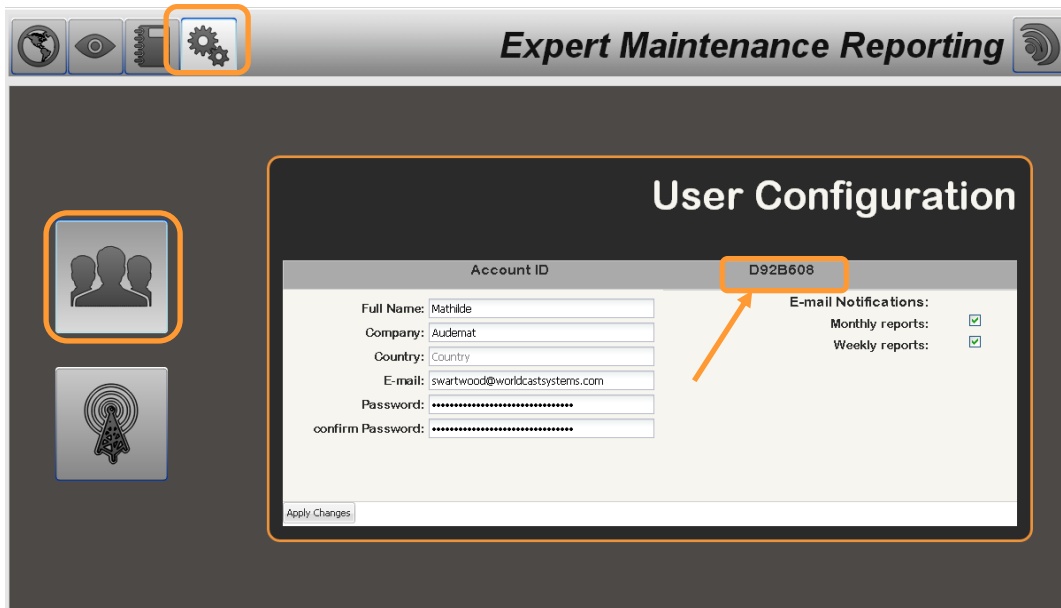
You will soon receive an email with instruction on how to create you password. The link given in the email will only be valid for a day.

As soon your new password is created, you will be able to use it to connect to the EMR site using the standard login page.

i If you forget your password, follow this same procedure to create a new one.

11.1.2. Retrieving your account ID

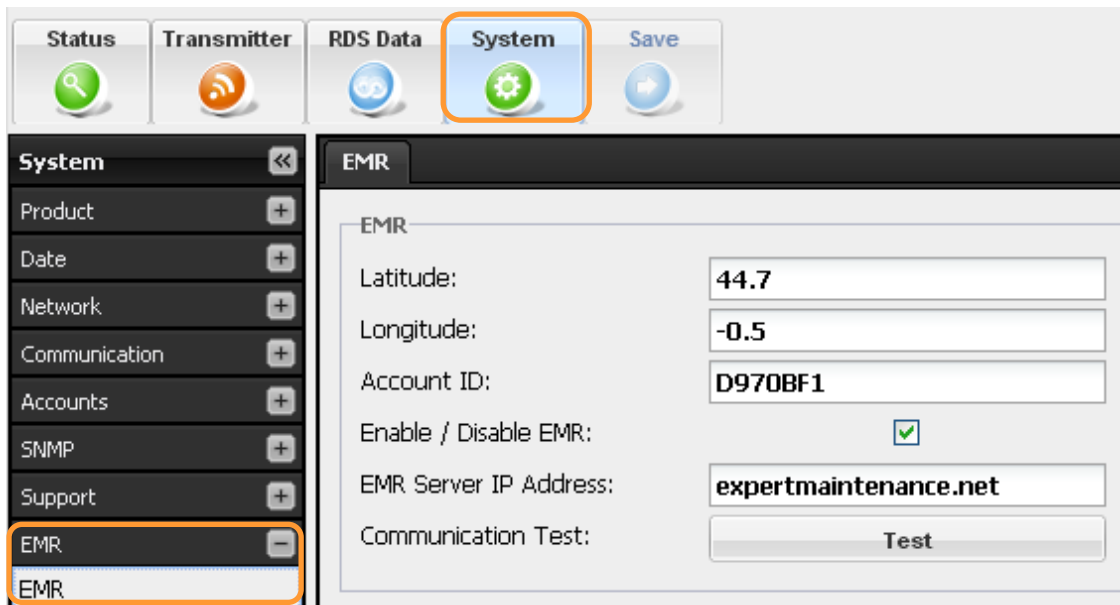
Once connected, display the configuration pages and view your account settings.



Note the account ID; it will be required to set the transmitters.

11.1.3. Setting up transmitters

Connect to the embedded web site of your transmitter and display the System/EMR page:



Enter its position and your EMR account ID as retrieved above.

Check the box to enable EMR.

Enter the IP address of the EMR server (or web address) and click the Test button to establish proper communication between your transmitter and the EMR server..

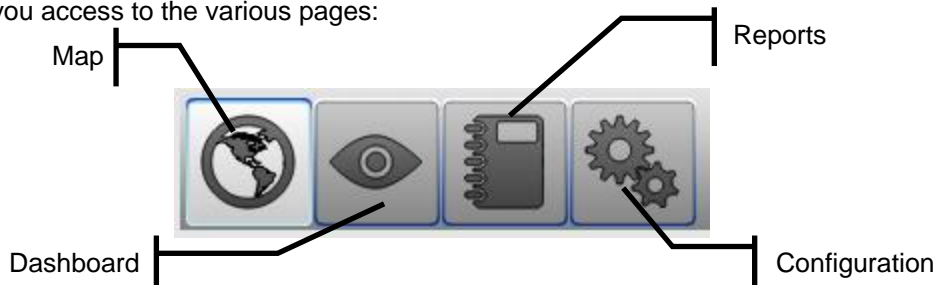
Repeat this operation with each transmitter that will be monitored.

11.2. Using EMR

11.2.1. Présentation

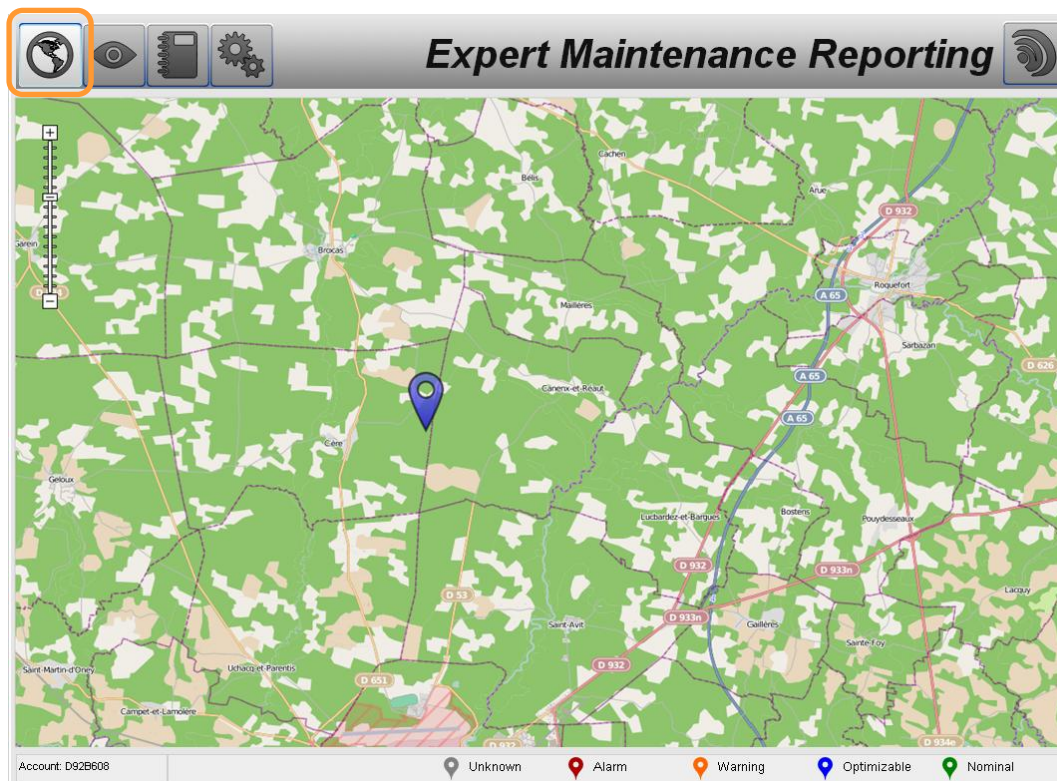
Connect to the EMR site again using your login and password.

A tool bar gives you access to the various pages:








11.2.2. Viewing the map

The map is the first page you see.



The cursor on the top left the map allows changing the zoom level.

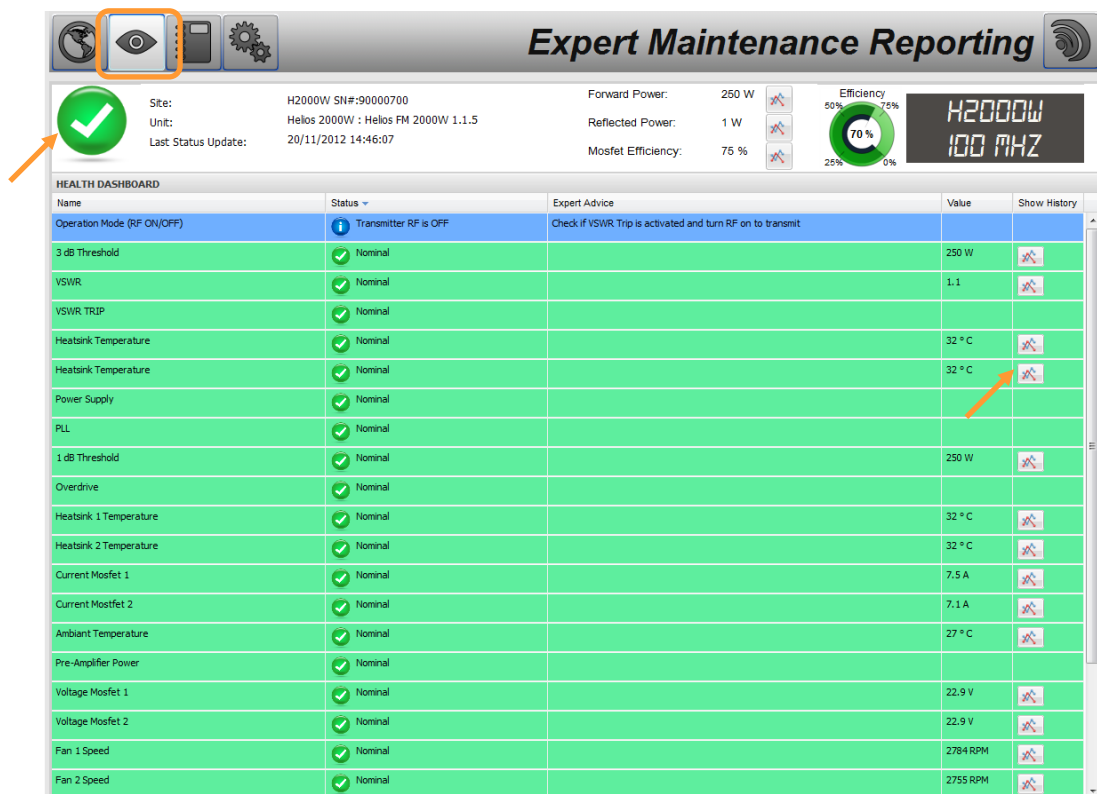
Symbols on the map indicate where transmitters are and what their statuses are:

-  Transmitter unknown, communication cannot be established
-  Transmitter with at least one alarm
-  Transmitter with at least one warning type event
-  Transmitter could be optimized
-  Transmitter in nominal state





See section 3 for more information on the transmitter status.

11.2.3. Dashboard

Click on an icon on the map to display the dashboard for the selected transmitter.



In the header of the dashboard, general transmitter information is given along with its status. The status is identical to the map with the following symbols:

-  Transmitter with at least one alarm
-  Transmitter with at least one warning type event
-  Transmitter could be optimized
-  Transmitter in nominal state

See section 3 for more information on the transmitter status.

The following parameters are also given, within a range depending on the transmitter power:

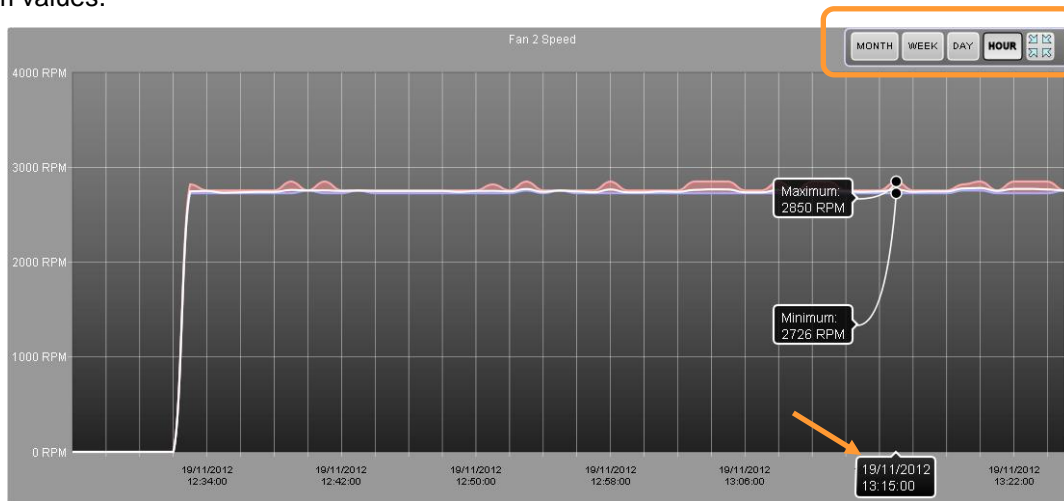
	20 W	100 W	350 W	750 W	1000 W	1500 W	2000 W
Forward power *	0 - 25 W	0 - 120 W	0 - 400 W	0 - 900 W	0 - 1200 W	0 - 1700 W	0 - 2200 W
Reflected power *	0 - 5 W	0 - 20 W	0 - 50 W	0 - 50 W	0 - 50 W	0 - 100 W	0 - 100 W
Mosfet efficiency *	0 - 100%						
Global efficiency	0 - 100%						

In the main table, a set of parameters is displayed. The list and range of possible values vary depending on the transmitter power:

	20 W	100 W	350 W	750 W	1000 W	1500 W	2000 W
Local mode	X	X	X	X	X	X	X
Operation mode	X	X	X	X	X	X	X
Standby	X	X	X	X	X	X	X
3 dB Threshold *	0 - 25W	0 - 120 W	0 - 400 W	0 - 900 W	0 - 1200 W	0 - 1700 W	0 - 2200 W
1 dB Threshold *	0 - 25W	0 - 120 W	0 - 400 W	0 - 900 W	0 - 1200 W	0 - 1700 W	0 - 2200 W
VSWR *	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5	1 - 5
VSWR TRIP	X	X	X	X	X	X	X
Pre amplifier Power			0 - 10 W	0 - 10 W	0 - 10 W	0 - 15W	0 - 15W
Overdrive			X	X	X	X	X
Power supply 1	X	X	X	X	X	X	X
Auxiliary Power supply	X	X	X	X	X	X	X
Low battery	X	X	X	X	X	X	X
Voltage Mosfet 1 *	0 - 30 V	0 - 30 V	0 - 30 V	0 - 60 V	0 - 60 V	0 - 60 V	0 - 60 V
Voltage Mosfet 2 *						0 - 60 V	0 - 60 V
Current Mosfet 1 *	0 - 4 A	0 - 10 A	0 - 25 A	0 - 25 A	0 - 35 A	0 - 30 A	0 - 40 A
Current Mosfet 2 *						0 - 30 A	0 - 40 A
Fan1 speed *		0 - 15000 rpm	0 - 5000 rpm	0 - 5000 rpm	0 - 5000 rpm	0 - 6000 rpm	0 - 6000 rpm
Fan2 speed *		0 - 15000 rpm				0 - 6000 rpm	0 - 6000 rpm
Ambient temperature *	-30 - +70°C	-30 - +70°C	-30 - +70°C	-30 - +70°C	-30 - +70°C	-30 - +70°C	-30 - +70°C
Heatsink Overheat 1 (Alarm Heat) *			0 - 100°C	0 - 100°C	0 - 100°C	0 - 100°C	0 - 100°C
Heatsink Overheat 2 (Alarm Heat) *						0 - 100°C	0 - 100°C
Heatsink Temp 1 (Alarm Temp) *	X	X	0 - 100°C	0 - 100°C	0 - 100°C	0 - 100°C	0 - 100°C
Heatsink Temp 2 (Alarm Temp) *						0 - 100°C	0 - 100°C
PLL lock	X	X	X	X	X	X	X
10 MHz switch	X	X	X	X	X	X	X
RDS switch	X	X	X	X	X	X	X
Audio Switch	X	X	X	X	X	X	X
RF Present	X	X	X	X	X	X	X

All values are given in real time. For parameters followed by a * in the table, values are logged and a time graph can be displayed by clicking the button .

The graph below shows curve data averaged over the past hour, day, week or month, with minimum and maximum values.



When changing the time scale using the hour / day / week / month buttons, the selected time remains centered in the display frame.

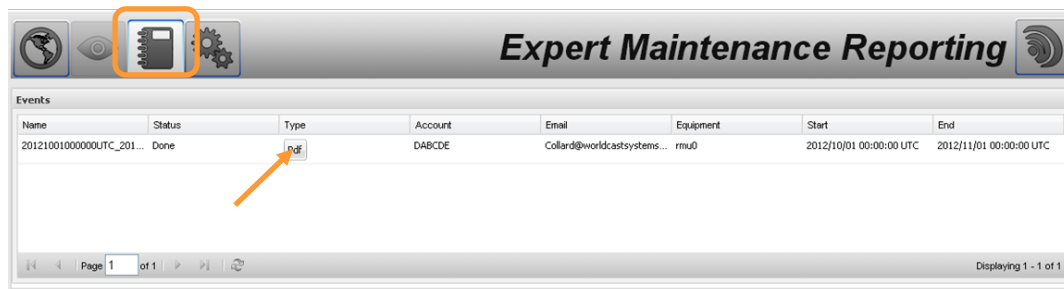
You can slide the date tag to display the compound value at a given time.

Return to the main view by clicking .

 *Curves are refreshed once per hour.*

11.2.4. Reporting

The reporting pages list available reports.



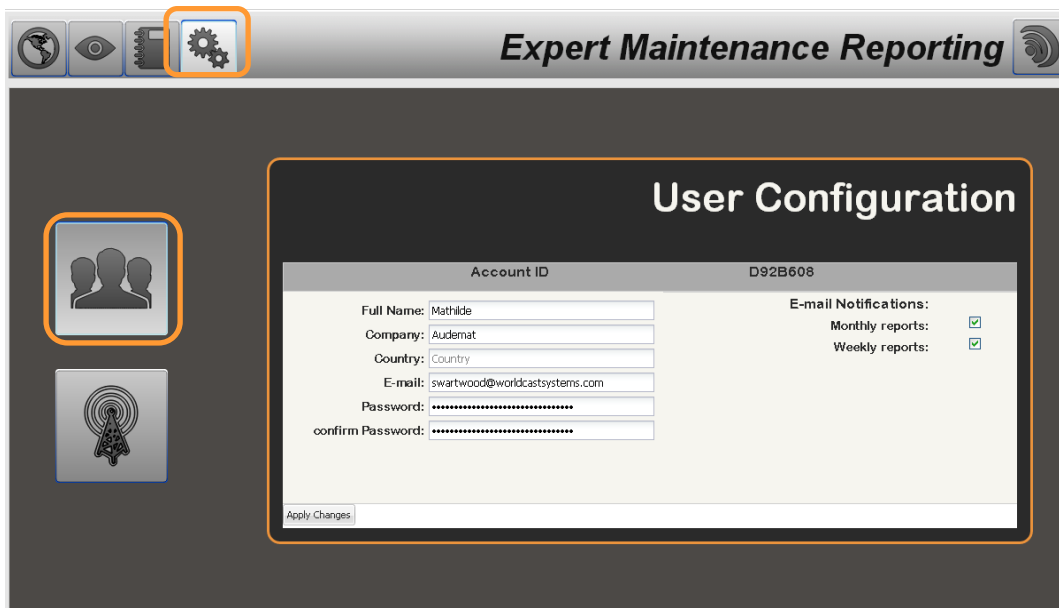
The status of the report can be 'in progress' or 'done'. When 'done', it can be downloaded as a pdf file.

It includes the parameters described above and available graphs.

Reports can be automatically emailed (see next section).

11.2.5. Configuration

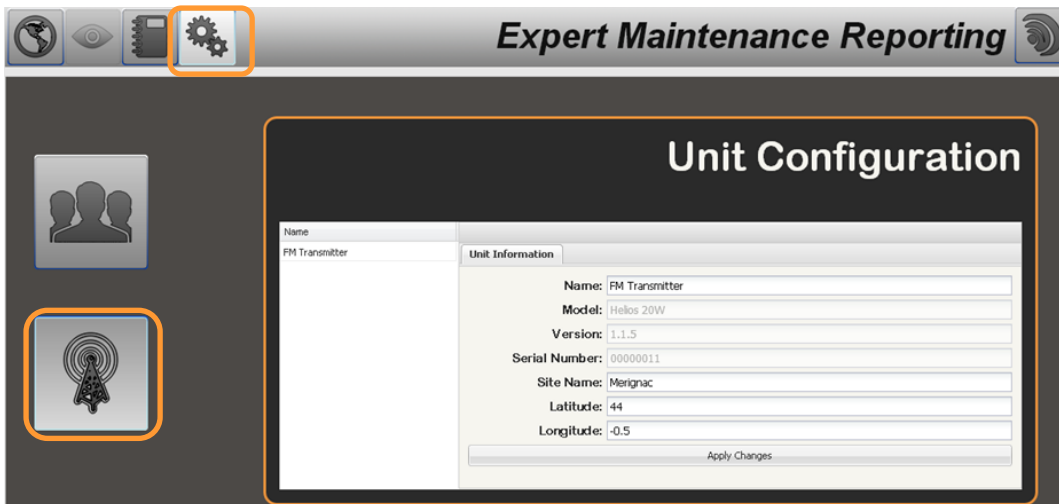
The configuration pages allow you to modify your own account and to set the transmitters.



On the user configuration page, set the notifications you would like to receive by email by checking monthly and/or weekly report. Reports can also be downloaded on the Report page.

Click the “Apply changes” buttons to save your changes.

Click the transmitter button to modify the transmitters associated with your account. Default information is retrieved directly from the transmitters.



Click the “Apply changes” buttons to save your changes.

11.3. Transmitter status

A series of events gives the status of the transmitter. In case there are several events at once, the status will be that of the strongest event (Alarm > Warning > Optimizable). Suggestions are given to correct the issue or improve the performance of the transmitter.

In the table below, alarm type events are in red, Warning type events are in yellow, optimizable events are in blue.

Event	Description	Possible solution
3dB	RF output power is below the 3 dB threshold	First check output power: If the power is very low: there is another issue like temperature, interlock, drive too low...please check these. If the power is still low: check if there is a VSWR alarm. If yes quickly check cable and connectors to the antenna.
VSWR	VSWR over the threshold	Double check your antenna and RF cable.
VSWRTRIP	VSWR has reached the threshold several times	Double check your antenna and RF cable then switch ON RF.
TEMP	Heatsink overheat	Heat is too high. Double check the internal fan(s), cooling system, and remove dust.
SUPPLY1	Power supply fault	Power supply is in protection mode (no power). Switch the transmitter off and on again.
PLL	Digital modulator on wrong frequency	Check your 10 MHz input source. If not applicable, contact technical support.
MAX1DB	RF output power is below the 1 dB threshold	The RF output is a little bit lower than expected. Check your antenna system.
Overdrive	The amplifier stage RF input is too high	Contact technical support.
HEAT1	Heatsink 1 temperature is too high	Double check the internal fans.
Heatsink Temperature	Heatsink temperature is too high	Double check the internal fans.
Current Mosfet	High current detected on the amplifier stage	High current detected on the amplifier stage. Check the VSWR, Reduce the RF output power and contact technical support.
CUR2,	High current detected on the amplifier stage	High current detected on the amplifier stage. Check VSWR, Reduce the RF output power and contact technical support.
AMB	Ambient Temperature	Ambient temperature over the threshold. The ambient temperature is too high. Double check your cooling system
VOLT1	High voltage detected on the amplifier stage	Check the VSWR, Reduce the RF output power and contact technical support.
FAN1	Fan 1 Speed	FAN replacement: if you have a temperature alarm, please proceed with the replacement of the fan within the next month If not, please proceed with the replacement of the fan during your next visit.
VOLTAUX	Auxiliary Power Supply	Auxiliary power supply fault. Contact technical support.
BATLOW	Low Battery	Internal battery is low. Don't turn off the transmitter and contact technical support.
RDSSWITCH	RDS Switch	The transmitter has switched to a backup RDS source, Double check your Studio-Transmitter Link.
SWITCH10M	10 MHz Switch	The digital modulator switched to the internal 10 MHz clock. Double check your 10 MHz source.
TXMODE	Local Mode	Transmitter is in Local Mode. Remove the Local Mode as soon as the maintenance is done to allow remote access and alarm logging.
OPMODE	Operation Mode (RF ON/OFF)	Transmitter RF is OFF. Check if the VSWR Trip is activated and turn RF on to transmit.

APPENDIX A: SOFTWARE OPTION MANAGEMENT

A set of options is available for Helios FM transmitters. Contact your Ecreso dealer if you wish to install one of them after the initial transmitter purchase.

You will need to retrieve the software activation key from the transmitter and forward to your Ecreso contact. From this activation key a new key will be created which will unblock the desired option. The last step will be to send it to the transmitter.

This activation process can be done using the front panel, the PC application or serial commands. Follow the selected procedure as described below.

A.1. Using the front panel application

Display the License menu, only visible in Expert mode (first switch to Expert mode if necessary).

```
9 8 . 0 0 M H z      1 0 0 W
-> L I C E N S E >
```

Press the “Enter” button and write down the transmitter’s serial number.

```
1 S E R I A L N U M B E R
  0 0 0 0 0 0 2 5
```

Press the “+” key until you see this screen.

```
1 E N A B L E L I C .
  -> N E W >
```

Press the “Enter” button to access the Enable License sub-menu, then press “Enter” again to generate the key for your transmitter.

```
2 G E N E R A T E K E Y
  -> G O
```

Send the serial number and the key to Ecreso.

A new key will be returned to you.

To enter the new key, access the License menu then access the Enable License screen. The ‘Pending’ state indicates the transmitter awaits a new key.

```
1 E N A B L E L I C .
  -> P E N D I N G
```

Once you have received the new key, press the “Enter” button to display this screen and press Enter again to switch to edit mode.

```
2 E N T E R K E Y
  -> 0 0 0 0 0 0 0 0 0 0 0
```

Using the “+” and “–” keys, adjust the value for each digit, press “Enter” to go to the next digit.

Press the “+” key until you see the Go To screen and select ‘License’ to return to the previous level of menus.

```
1 G O T O
  -> L I C E N S E -> A D D .
```

Press the “+” key to access the Current License screen. The new license should now be part of the list.

```
1 C U R R E N T L I C E N S E
  -> R D S B A S I C , P L A Y E
```

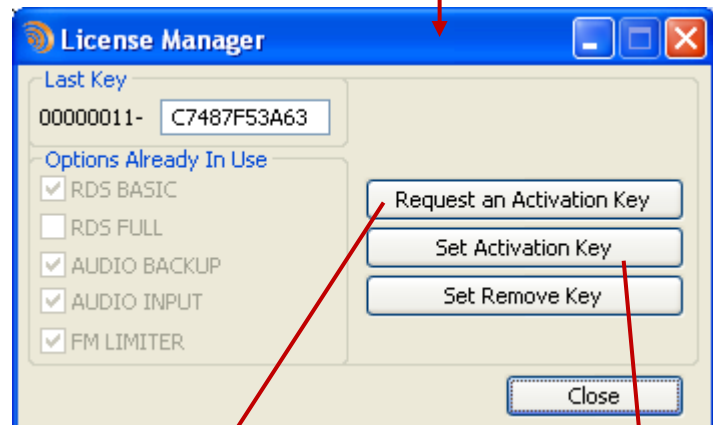

A.2. Using the PC application

License management is only available with Engi version 1.1.1 (or more recent).

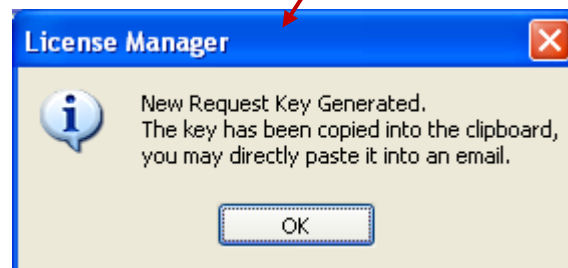
Connect to the transmitter with the Engi application, either with a direct connection or via the network (see chapter 7) and display the Tools/License Manager menu.



Click the 'Request an Activation Key' button: a value is generated by the transmitter and copied into the clipboard.

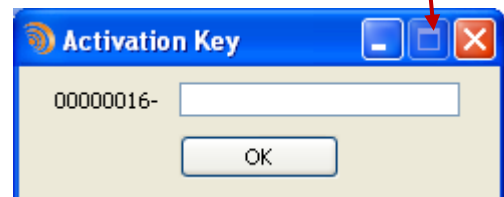


Send this key to Ecreso.
A new key will be returned to you.



Once you have received the new key, display the License Manager again and click on the 'Set Activation Key' button. Copy the new key into this window and click the 'OK' button to enable the license.

The new option is now enabled.



A.3. Using serial commands

Connect a PC to the front panel serial port as described in chapter 6.

Send the command:

```
SYS.KEY.ADD
```

The return value will have the following format: *serial_number-key1*.

Send this key to Ecreso.

A new key will be returned to you (*serial_number-key2*).

Once you have received the new key, send the command:

```
SYS.KEY.ADD= serial_number-key2
```

The unit will return:

```
$OPTION ACTIVATED
```

If the key is not recognized, the unit will return:

```
WRONG KEY
```

In that case you will need to contact Ecreso.

You can check the current options by sending the command:

```
SYS.OPT.LIST
```

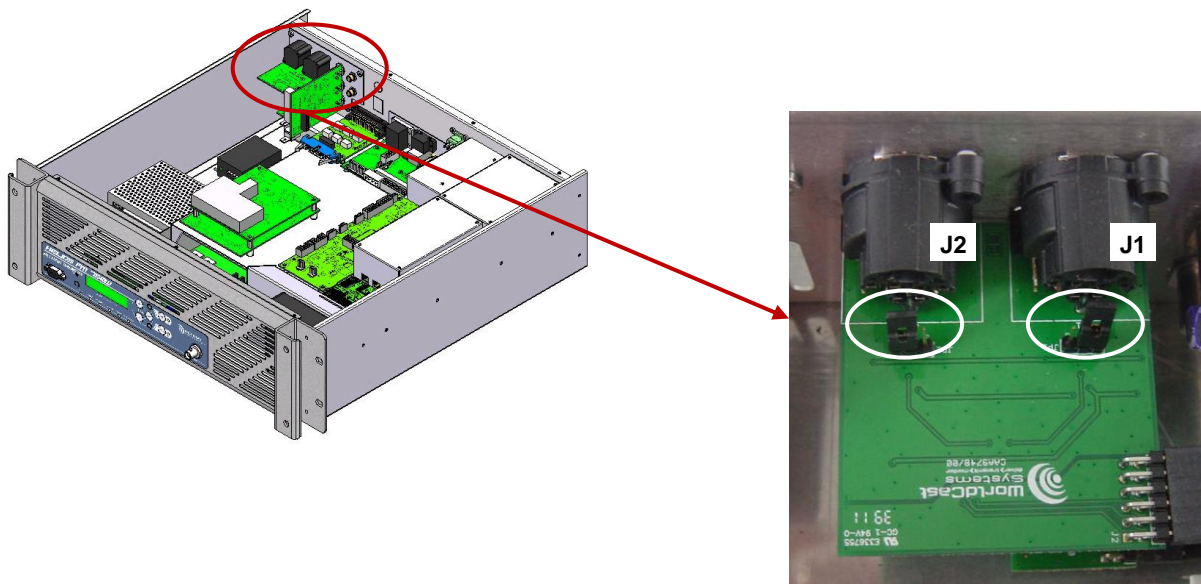
The unit will return the list of enabled options, including the new one.

APPENDIX B: ADJUSTING THE IMPEDANCE OF ANALOG INPUTS

Default impedance of analog inputs is high.

It can be set to 600 Ω by jumpers.

Before setting the jumpers, make sure that all cables are disconnected. Remove all the screws securing the cover.

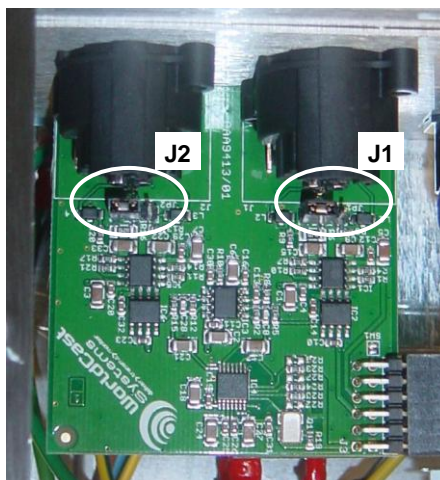


Jumper position on a type II board:

	J2	J1
High impedance	■ ■ ■ ■	■ ■ ■ ■
600 Ω	■ ■ ■ ■	■ ■ ■ ■

Jumper position on a type I carte board (previous model):

	J2	J1
High impedance	■ ■ ■ ■	■ ■ ■ ■
600 Ω	■ ■ ■ ■	■ ■ ■ ■



APPENDIX C: MAINTENANCE

! *For all maintenance operations requiring the chassis to be open, ESD work space and protections are necessary.*

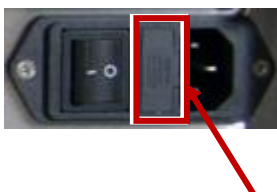
To order spare parts, please contact your Audemat dealer.

C.1. Changing the fuses

i *If you need to change the fuses, make sure the surge protector has not been damaged (see section C3).*

Helios FM 350 W / 750 W / 1000 W:

Fuses are located in the power socket on the rear panel. Open the trap to remove them.



Helios FM 1500 W / 2000 W:

On the rear panel, the switch can En face arrière, l'interrupteur peut avoir trois positions :



The transmitter is on



The transmitter is off

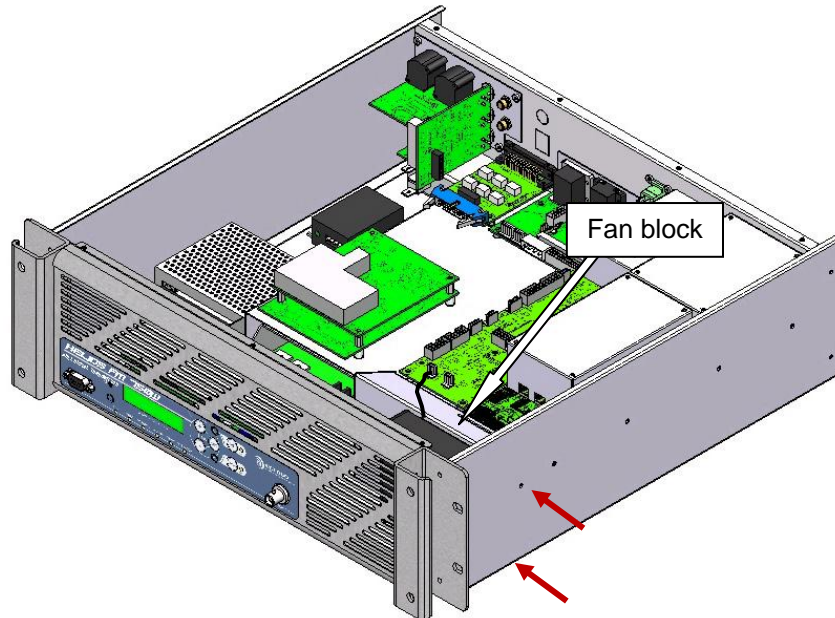


The circuit has been cut off. Turn off the module (position 0) and turn it on again (position 1) to reset it.

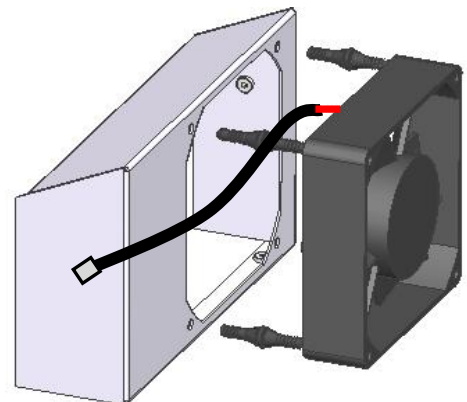
C.2. Changing the fan

Fan reference: SP01309

- Turn off the module needing a new fan and pull it out of the cabinet.
- Unscrew all lid screws and remove the lid.



- Unscrew the screws that keep the fan in place: 1 on the side and 2 under the frame.
- Disconnect the cable connecting the fan to the control board.
- Pull out the fan block.
- Take out the fan from its frame by gently pulling the 4 rubber legs.
- Insert the legs of the new fan using pliers. Make sure the cable does not get stuck.
- Place the fan block back in the frame.
- Screw it back with 2 screws under the frame and one on the side.
- Connect the fan cable on the FAN1 connector of the control board.
- Screw the lid back in place.

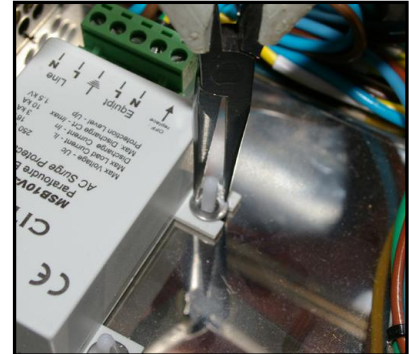
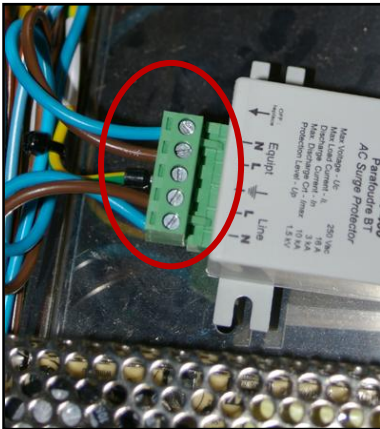


C.3. Changing the surge protector

To check whether the surge protector is damaged, remove the top cover: if the surge protector indicator LED is on, it is ok, if the LED is off, the surge protector needs to be replaced.

The surge protector is located between the power supply bloc and the mains filter.

1. Disconnect the unit.
2. Unscrew the top cover and remove it.
3. Using pliers, remove the metal washers that keep the surge protector in place on the rivets and disconnect it from the terminal.



1. Replace the old surge protector with the new one.
2. Connect the surge protector to the terminal.
3. Snap the washers on the rivets to secure the surge protector in the chassis.
4. Set the cover back in place.

C.4.

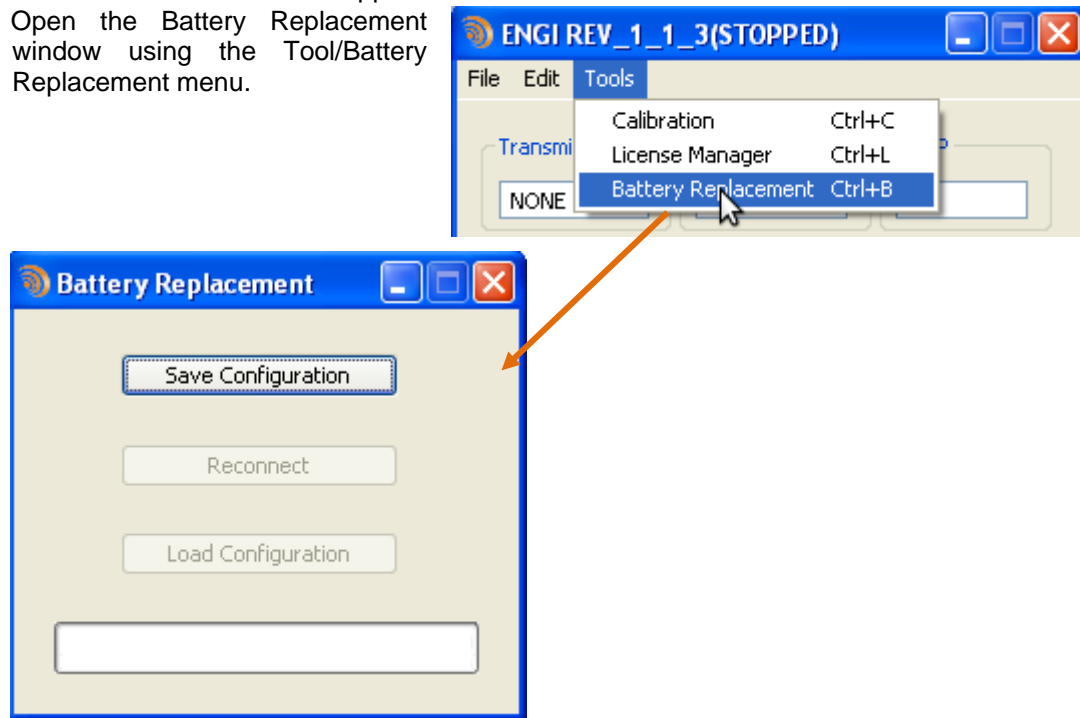
C.5. Changing the battery of the control board

The 'battery low' alarm is triggered when the control board battery needs to be replaced.

Saving the configuration

Before changing the battery, we recommend you save the configuration:

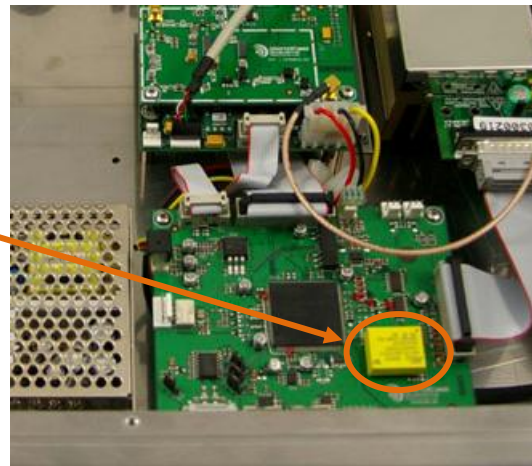
- Connect your module to a PC to be able to use the PC application (see chapter 7).
- Once connected launch the application.
- Open the Battery Replacement window using the Tool/Battery Replacement menu.



- Click the "Save Configuration" button and wait for the end of the saving procedure.

Changing the battery

- Turn off the unit and disconnect it from the mains.
- Unscrew the top cover and remove it.
- The control board is located on the front of the unit; change its battery.
- Set the cover back in place.
- Reconnect the unit and turn it on.



Loading the configuration

- Connect your module to a PC and launch the PC application as in the first step of this procedure.
- Open the Battery Replacement window using the Tool/Battery Replacement menu.
- Click the "Load Configuration" button and wait for the end of the loading procedure

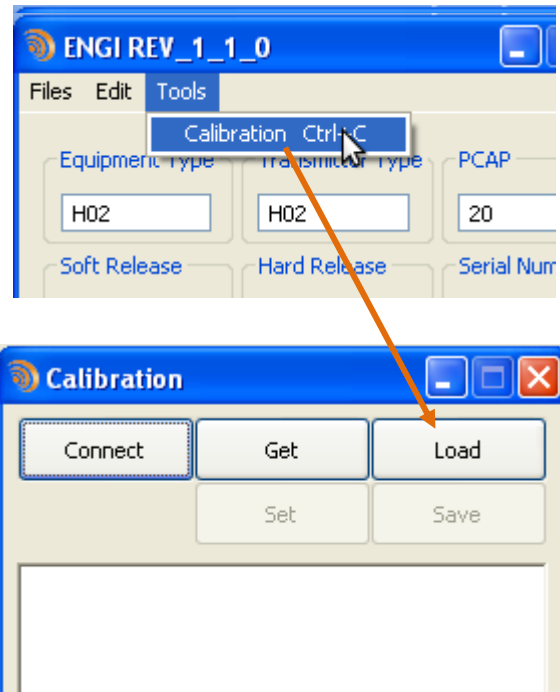
APPENDIX D: TROUBLESHOOTING

D.1. Calibration

! ***Your transmitter is calibrated in factory and should not need to be recalibrated. In case it become misadjusted, first contact our technical support department. They may advise you to recalibrate the unit, in which case you will be sent the calibration file.***

Connect your module to a PC to be able to use the PC application (see chapter 7). Once connected launch the application and:

- Open the Calibration window using the Tool/Calibration menu.
- Click the “Load” button and select the .cal calibration file supplied by Ecreso.
- Click the “Set” button to load the calibration file into the unit.



D.2. Complete Reset of the Helios FM

! ***The reset procedure erases you whole configuration; however the calibration is kept.***

Connect a PC to the front panel serial port as described in chapter 7.

Send the command:

```
SYS.RAZ=RAZ
```

After the module has restarted, on the front panel:

- Enter the transmitter’s nominal power (example 750 for a Helios FM 750 W).
- Set the CAN Id according to the transmitter type.
- Exit the Init Config menu to return to standard menus.

```
T X   P C A P
-> 7 5 0
```

```
I D   C A N
-> 0 0
```

```
I N I T   C O N F I G
E X I T
```


APPENDIX E: EMR & SECURITY

E.1. Transmitter Notification Protocol

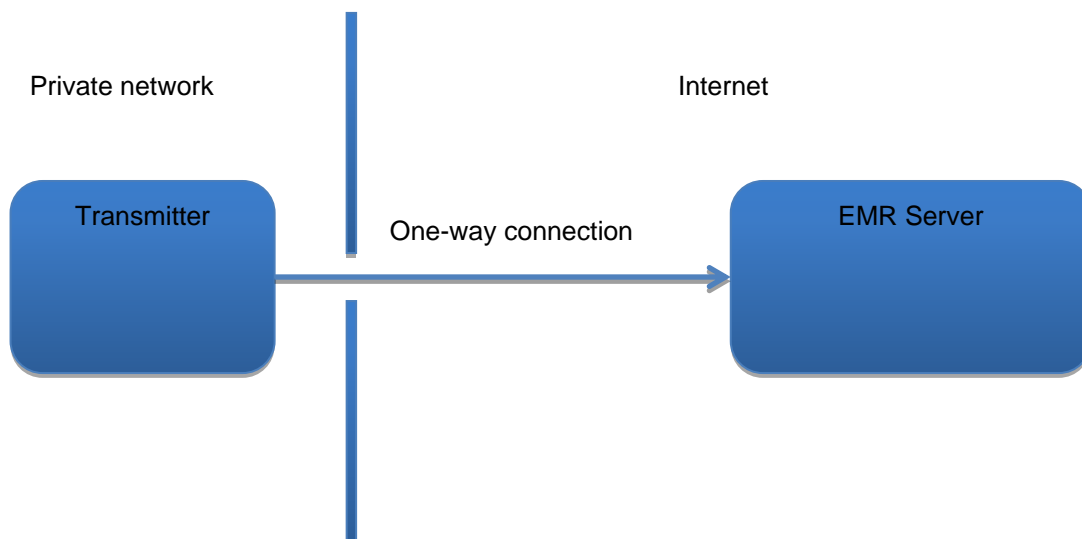
As soon as the EMR option is activated in the transmitter, or after a restart, the Transmitter's IP Module will send a notification packet to the EMR server. Then an update to this notification packet will be sent every 60 minutes (or any configured interval).

The notification packet is a JSON (www.json.org) payload transferred into an HTTP/S POST message, encrypted with the standard TLS protocol. In case of connection failure the transmitter will not retry until the next scheduled attempt.

In case of an alarm inside the transmitter, a notification packet will be issued immediately.

JSON packet payload contains only technical information related to the transmitter status and measurements.

In order to succeed the transmitter needs a route to the Internet (setting the gateway accordingly), and an unfiltered outbound access to https port. Firewalls are usually not restricting outgoing connections, so no specific changes have to be done. DNS access is also required to reach the EMR server, but as a common service, DNS protocol is almost always authorized by firewalls. Note that the transmitter factory settings use Google's public DNS servers (see <https://developers.google.com/speed/public-dns/>), so you don't have to provide your own.



E.2. EMR Server Security

Sensitive data is stored in the server database in a protected form. All customer private information, and transmitter nature and localisation are stored encrypted. In case of a theft of the database files or backups, no useful information will be readily available; the effort that would be required to breach the security would be disproportionate compared to the value!

User passwords are not stored at all in the server. Authentication is done using the HMAC protocol (see http://en.wikipedia.org/wiki/Hash-based_message_authentication_code). Stored password hashes are encrypted using PBKDF2 protocol as recommended by USA NIST (see <http://csrc.nist.gov/publications/nistpubs/800-132/nist-sp800-132.pdf>).

EMR Web Server automatically uses the secured HTTP/S protocol, and cannot be accessed with an unsecured connection.

FOR MORE INFORMATION

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